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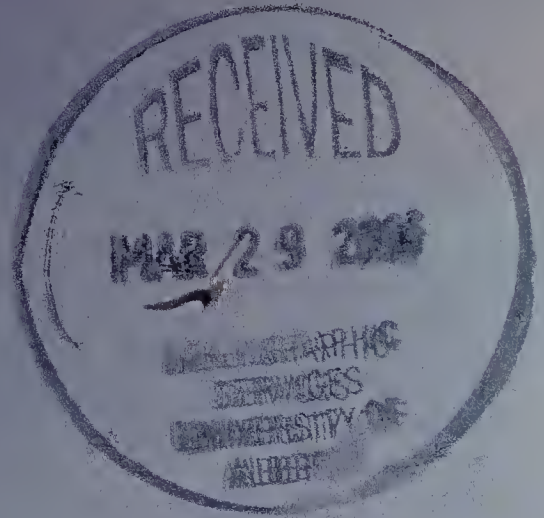


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BLUE JAY

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COVERS:

Front - Forster's Terns flying above Delta Marsh, Manitoba on 20 June 2005. See article on page 29. Photograph by Justin Rasmussen.

Back - This Grey Treefrog hunted insects at a Pinawa, MB window on the night of 3 August 2005. See article on page 44. Photograph by Peter Taylor.

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64TH ANNUAL SASKATCHEWAN CHRISTMAS BIRD COUNT-2005.

ALAN R. SMITH, 115 Perimeter Road, Saskatoon SK S7N 0X4 and
ROBERT E. JOHANSON, 406 125 5th Avenue N, Saskatoon SK S7K 6A5

The counts

The growth of the Saskatchewan Christmas Bird Count (CBC) seems to have reached a plateau. Except for a record number of 106 counts in 2001, the number of counts for the last nine years has stabilized at around 100. This winter's 98 counts is down slightly from last winter's 101. The loss of several counts from last year has been partly compensated by new counts from Dorintosh and Sawyer Lake and "revived" counts from Christopher Lake, Ellisboro and Pierce Lake.

Mild weather and a widespread dearth of snow cover seems to have encouraged the 802 observers (the fewest since 1999) to spend a record 1739 hours in the field and at feeders looking for birds.

The birds

Slightly over 133,000 birds of 99 species were recorded on count day. Saskatoon and Gardiner Dam, both with 40 species, led all counts for the most species seen, but as Saskatoon had two additional species in the count period, one could argue that they won the crown for the most species at a count locality for the fourth consecutive year. This aside, *every* count, no matter how many species are seen, is important to us.

Population trends

Almost everyone thought there were fewer birds this winter and the statistics bear this out. As noted, observers spent a record number of hours counting birds, but their perseverance was not often rewarded. The average number of birds and species per count fell from 1476 birds of 18.4 species last year to 1368 birds and 15.6 species this year.

Most of the species with the strongest declines were in the finch family (Table 7). The 67 Common Redpolls on count day were the fewest seen since 1970 when there were only 35. No Hoary Redpolls were noted; the last time that happened was in 1994. Most other finches declined as well; even the House Finch declined for the first time since 1997. The species continues to expand its range, however, with new CBC records to the north on the Birch Hills and Love-Torch River counts and to the south on the Grassland National Park count. The American Goldfinch was the only finch to buck the trend with a record high count of 35 birds from Whitewood and another 93 count day birds from 11 other locations.

One of the most spectacular events was the invasion of the Aspen Parklands and fringes of the Mixed

Prairie by Boreal Chickadees. A number of localities recorded the species for the first time. Interestingly, the number of Boreals increased in the Southern Boreal Forest as well (from 0.27 birds per party hour in 2004 to 0.43 birds per party hour this year). It might be speculated that the invasion was driven either by a high production of young in the boreal forest or by an invasion of birds from areas to the north and not covered by the CBC.

Eurasian Collared-Doves continued to increase, with an new high count of 30 birds on the Moose Jaw count (Table 6). A new high count for Common Ravens (418) was set on the La Ronge South count on 28 December. The record lasted for one day! The next day 460 were seen on the Love-Torch River count.

New Species

One new species was added on this count. An Eastern Towhee was seen on the Regina count. This brings the total number of species seen on the Saskatchewan CBC to 181 species.

Other rarities

Other rarities included our second Ruby-crowned Kinglet on the Gardiner Dam count and our fourth Brown Thrasher on the Fort Qu'Appelle count. This year, the recently recognized Cackling Goose was seen on both Gardiner Dam and Estevan counts.

Count areas and participants

(Names of compilers are in italics).

1. ARCHERWILL. Joe Cooper, Joyce Cooper, Doris Dewhurst, Joanne Folstad, Ken Folstad, Gerald Hiron, Susan Hiron, *Elaine Hughes*, Dorothy Klettberg, Willie Klettberg, Judy Revoy, Stan Revoy, Linda Winnichyn, Morris Winnichyn.

2. ARMIT. *Val Harris*, Sheila Lamont, Joyce Zak.

3. BANGOR. Allan Bolton, *Lynn Bolton*, Alen Hayward, Aileen Hayward, John Maddiford, Leslie Maddiford, Bev McLaren, Rae McLaren.

4. BETHUNE-DILKE. *Doug Laing*, Vera Laing.

5. BIGGAR. Dale Booth, Murray Newton, Linda Schnedar, Lorrie Sielski, Larry Sutherland, Lorne Sutherland, Brandon Wapple, *Guy Wapple*, Marguerite Wapple, Rob Wapple, Sandra Wapple.

6. BIRCH HILLS. Carman Dodge, Margaret Mareschal, *Moe Mareschal*, Don Weidl.

7. BRIGHTWATER RESERVOIR. Xiomara Mora Alvarez, *Alan Smith*.

8. BROADVIEW. *David Chaskavich*, Don Weidl, Lorraine Weidl, Tony Weidl.

9. BROMHEAD. Martin Bailey, *Carol Bjorklund*.

10. CABRI. *Carman Dodge*.

11. CANDLE LAKE. Carman Dodge, Moe Mareschal, *Don Weidl*.

12. CHRISTOPHER LAKE. *Jeannie Walker*.

13. CHURCHBRIDGE. Elin Johnson, Lynne Johnson, Ron Johnson, *Wally Karau*, Elaine Pollock, John Pollock, Garland Thiele, Ed Wirth, Gloria Wirth.

14. CLARK'S CROSSING. Alison Baudru, Carol Blenkin, Lucille Bradatsch, Dave Cook, Louise Cook, Yvonne Cuttle, Lorne Duczek, Marilyn Haskins, Robert Johanson, Marlene Kalanack, Heney Klypak, Gordon Koshinsky, Margaret Koshinsky, Kay Krueger, Gerard Lahey, Carol Maccan, Audrey MacKenzie, Bill MacKenzie, Ted Melville, Hilda Noton, Jan Shadick, Stan Shadick, Chris Soteris, Marten Stoffel, *Michael Williams*, Kay Willson, Phil Willson, Jim Wood.

15. CODETTE LAKE. *Doug Boivin*, Carman Dodge, Barb Weidl, Don Weidl.

16. CORONACH. Ryan Dudragne, *Val Harris* (*non-participating compiler*), Ron Jensen.

17. CRAVEN. Betty Binnie, Marie Boivin, Ruth Englund, Shirley Friel, Carl Graf, *Trevor Herriot*, Paule Hjertaas, Louise Holloway, Phil Holloway, Marty Karasin, Barbara Mader, Doug Mader, Duster Mader, Barry Mitschke, Kevin Moore, Ron Myers, Curtis Pollock, Brad Wolf.

18. CROOKED LAKE. *Boyd Metzler*, Pat Ward.

19. CROOKED RIVER. *Margaret Mehler*, Morley Mehler.
20. CYPRESS HILLS PROVINCIAL PARK (Centre Block). John Douglas, Cam Fraser-Davie, Darian Fraser-Davie, Jazmin Fraser-Davie, Michelle Fraser-Davie, Joan Hodgins, Amy Krause, Rick Krause, David Larson, Margaret Larson, Mimi Martin, *Melody Nagel-Hisey*, Alma Smith, Kathy Stasienko, John Stasienko, Lauren Stasienko, Sidney Stasienko.
21. DORINTOSH. *Joe Twidale*, *Lorraine Twidale*
22. DUCK LAKE. Keith Hobson, *Alan Smith*, Phil Taylor.
23. DUNDURN. *Alan Smith*, Don Weidl.
24. EASTEND. Cam Fraser-Davie, Darian Fraser-Davie, Jazmin Fraser-Davie, Michelle Fraser-Davie, Darcy French, *Robert Gebhardt*, Joan Hodgins, Mary Thomson.
25. ELLISBORO. *David Chaskavich*, Lorrie Sens.
26. EMMA LAKE. *Deanna Krug*, Norman Krug.
27. ENDEAVOUR. *Norman Harris*.
28. ESTERHAZY-HAZELCLIFFE. Gunther Gauer, Doug Lomenda, Wayne Provick, *John Simpson*.
29. ESTEVAN. *Val Harris*, Kathy Hedegard, Sheila Lamont, Craig Palmer, Brandon Wapple, Guy Wapple.
30. ESTUARY NORTH. Cathy Cocks, *Dean Francis*, Frances Hartsook, Walter Steinley.
31. FENTON. *Carman Dodge*, Moe Mareschal, Don Weidl.
32. FORT QU'APPELLE. James Armstrong, Phyllis Bordass, Tim Davies, Doreen Harman, Barbara Hooper, *Ronald Hooper*, Alice Isfan, Lois Lamontagne, Vic Lamontagne, Jack Lowe, Jean McKenna, Allan Mlazgar, John Robinson, Elaine Willox.
33. FORT WALSH. Jared Clarke, Bob Ewart, Val Harris, Jeff Jensen, Ron Jensen, Sheila Lamont, Susan McAdam, Wilkes Parsonage, Wayne Renaud, *Guy Wapple*.
34. GARDINER DAM. Greg Fenty, Val Harris, Jeff Jensen, Ron Jensen, Sig Jordheim, Sheila Lamont, Wayne Renaud, Marten Stoffel, *Guy Wapple*, Dan Zazelenchuk.
35. GOOD SPIRIT LAKE. *Bill Anaka*, Joyce Anaka, Val Edwards; Phyllis McFaddin, Dorothy Riesz, Ray Riesz, Lloyd Wilson, Marj Wilson, Julia Wiwchar.
36. GOVENLOCK. Jared Clarke, Bob Ewart, *Val Harris*, Jeff Jensen, Ron Jensen, Sheila Lamont, Susan McAdam, Joan Moebis, Wayne Renaud, Joe Saville, Guy Wapple, Robert Wapple.
37. GRASSLANDS NATIONAL PARK. Ervin Carlier, Edna Facette, Pat Fargey, Debbie Kilfoyle, Don McDonald, Cheryl Penny, Chris Reed, *Robert Sissons*, Adrian Sturch.
38. GRAYSON. Carina Helm, *Charles Helm*, Daniel Helm, Linda Helm, Jeanette Zimmer, Karl Zimmer.
39. HARRIS. Betty Selsey, Fred Selsey, Brandon Wapple, *Guy Wapple*.
40. HEPBURN. *Phyllis Siemens*.
41. HUDSON BAY. *John Daisley*, Rosalie Daisley, Agnes Lewellin, Emily Mann, Amy Nagus, Sarah Nagus, Laurie Nielsen, Ron Shepard, Gloria Stang.
42. KELVINGTON (Roscommon School District). Pat Finnie, *Dianne Sloan*, Marguerite Sloan.
43. KENASTON. *Lawrence Beckie*, Doug Beckie.
44. KENOSEE LAKE. Boyd Metzler, *John Pollock*.
45. KITCHEN NORTH. *Dallas Fairburn*.
46. KILWINNING. *Ed Driver*, Margaret Driver, Mrs. Prosser.
47. KINDERSLEY NORTH. Cory Harris, *Jean Harris*, Keith Harris.
48. KINISTINO (Horseshoe Bend). Dannelle Messer, *Verna Messer*.
49. KINLOCH. Elaine Asbjournhus, *Don Forbes*, Doreen Forbes, Wayne Fletcher, Cliff Logan, Doreen Wickstrom.
50. KUTAWAGAN LAKE. *Val Harris*, Sheila Lamont.
51. KYLE. Lyle Cates, Darryl Jordheim, Sig Jordheim, Greg Nelson, Yvonne Nelson, Glen Pederson, Bill Stepple, *Dan Zazelenchuk*.
52. LA RONGE NORTH. *Dianne Allen*, Sharon Feschuk, Peter Mizanski, Kent Pointon, Lynn Riese, Alice Robert, Dave Sampson, John Schisler, Jan Shewchuk.

53. LA RONGE SOUTH. *Sid Robinson*, John Schisler, Jan Shewchuk, Tim Trottier, Karen Waters.
54. LAST MOUNTAIN LAKE N.W.A. Ross Dickson, *Val Harris*, Kerry Hecker, Ron Kennedy, Sheila Lamont, Lowell Strauss.
55. LEADER NORTH. *Daisy Meyers*.
56. LOVE - TORCH RIVER. Carol Blenkin, *Bert Dalziel*, Duke Dalziel, Joan Dalziel, Jody Dalziel, Sara Dalziel, Scott Edwards, Rosanne Kirkpatrick, Eileen L'Heureux, Paul L'Heureux, Jesse LeCuyer, Kyla LeCuyer, Bill Matthews, Lynn Matthews, Lillian Nasset, David Pratt.
57. LUSELAND. Estelle Finley, Graeme Finley, *Kim Finley*, Liam Finley, Robert Finley, Valerie Finley, Glen Martfeld.
58. MACDOWALL. *Myron Barton*, Lon Borgerson, Val Drummond, Ione Surbey.
59. MACNUTT. Dennis Glennie, John Skinner, *Tim Wendell*.
60. MATADOR. Cindy Romo, *Jim Romo*.
61. MAYVIEW. *Judith Graham*.
62. MEADOW LAKE. Bill Caldwell, Janet Caldwell, *Bob Wilson*, Ian Wilson.
63. MOOSE JAW. Floyd Alexander, *Donna Cork*, Ron Cork, Karry Hanley, Alan Lemieux, Shirley Lemieux, Bill McDonald, Lynn McDonald, Jeff Mander, Jean Ann Mowchenko, Len Mowchenko, Karen Nestman, Peter Norys, Helen Norys, Don Parr, Donna Parr, Sheina Wait, Brenda Winch.
64. MOOSE MOUNTAIN. *Greg Bobbitt*, Ross Douglas, Doyle Thomas, Val Thomas.
65. MORSE. Joyce Enns, Noel Enns, Ann Francis, Mike Francis, Leon Jacobs, Randy McCulloch, Joel Priebe, Ken Priebe, *Myrna Priebe*.
66. NIPAWIN. *Carol Blenkin*, Harry Budd, Vi Budd, Joyce Christiansen, Rose-Marie Cornand, Bert Dalzeil, Joan Dalzeil, Shirley Harstad, Wally Harstad, Elmer Hornseth, Amber LeCuyer, Autumn LeCuyer, Jennette LeCuyer, Wyatt LeCuyer, Wally Mollberg, Shelinda Phillips, Shirley Phillips.
67. NISBET FOREST, NORTHWEST. Ralph Abrey, *Sandra Jewell*.
68. NISBET FOREST, WEST. *Kim Clark*, Kiri Clark, Shamara Clark, Suzanne Clark, Evelyn Marshall, Jerry Perkin, Derry Perkin.
69. PIERCE LAKE. *Ted Hindmarsh*, Del Huget.
70. PIKE LAKE. Alison Baudru, Lou Baudru, John Bond, Laurel Brace, Ann Christensen, David Cook, Louise Cook, Jill Cornford, Peter Cornford, Yvonne Cuttle, Lorne Duczek, Betty Ann Dunlap, Stan Dunville, Mary Jane Eley, Bob Girvan, Mike Gollop, Robert Johanson, Kay Krueger, Carol Maccan, Audery Mackenzie, Bill Mackenzie, Bev McNaughton, Bob McNaughton, Ted Melville, Daniel Neves, Hilda Noton, Keith Pahl, *Frank Roy*, Nick Saunders, Jan Solem, Angela Stern, Marten Stoffel, Hilda Voth, Michael Williams, Jim Wood, Dwight Young, Nancy Young.
71. PRINCE ALBERT. Ralph Abrey, Jim Bahr, Kim Clark, Kiri Clark, Shamara Clark, *Carman Dodge*, Keith Dodge, Sandra Jewell, Murray Little, Syndi Little, Don Weidl, Al Willcocks, Shyla Wilkinson, Travis Wilkinson.
72. PRINCE ALBERT NATIONAL PARK. Coleen Baptist, Doreen Collingwood, Lorie Collingwood, Jim Durnin, *Dan Frandsen*, Kevin Ferrie, Doug Gullickson, Brad Lloyd, Fiona Moreland, Brad Muir, Murray Peterson, Adam Pidwerbeski, Lawrence Pidwerbeski, Samuel Pidwerbeski, Angela Salzl, Norm Stolle.
73. QU'APPELLE VALLEY DAM. Ryan Dudragne, Robert Johanson, Carol Maccan, Randy McCulloch, Frank Roy, Jan Shadick, Stan Shadick, Marten Stoffel, *Michael Williams*.
74. RAYMORE. *Val Harris*, Sheila Lamont.
75. REGINA. Angelina Barth, Inez Benesh, Doug Boivan, Marie Boivan, Lionel Bonneville, Stephan Bonneville, Jared Clarke, Lilamay Crawley, Ron Crawley, Jim Elliott, Shirley Friel, Shirley Gerloch, Susan Graham, *Dale Hjertaas*, Paule Hjertaas, Phyllis Ilesley, Rhéal Laroche, Richard Marcotte, Suzanne Mitten, Kevin Moore, Deborah Morrison, Jim Nordquist, Catherine Parkinson, Wayne Pepper, Brian Rainey, Margaret Skeel, Frank Switzer, May Switzer, Mr. T. Veitch, Mrs. T. Veitch, Steven Weir, Brad Wolf.
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77. ROUND LAKE (Qu'Appelle Valley). Kelly Bear, *Boyd Metzler*, Pat Ward.
78. SALTCOATS. Robert Barnhart, Irene Bobyk, Joan Farquharson, Walter Farquharson, Jim Jowsey, *Shirley Jowsey*, George Maben, Jean Morgan, John Sawkey, Rob Wilson.

79. SASKATCHEWAN LANDING PROVINCIAL PARK. Val Harris, Jeff Jensen, Ron Jensen, Sheila Lamont, *Sue McAdam*, Dan Zazelenchuk.
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87. SPALDING, Dora Knutson, Bill Spizawka, Kerry Spizawka, *Velma Spizawka*.
88. SPINNEY HILL. *Ed Driver*, Gerry Threlfall.
89. SQUAW RAPIDS. *Val Harris*, Sheila Lamont, Marten Stoffel, Guy Wapple.
90. STENEN (Crystal Lake). *Frances Buryk*, Peter Buryk.
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92. TOGO. Don Brock, Marlene Brock, Donna Dewores, Barb Elsasser, *Doug Elsasser*, Amanda Harper, Edith Mann, Helen Tomochko, Claudia Zengl.
93. TURTLE LAKE. *Merle Robinson*.
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98. YORKTON. *Bill Anaka*, Joyce Anaka, Cheryl Fraser, Norm Fraser, Bob Graham, Harley Large, Ruth Large, George Maben, Jeannie McGee, Dorothy Riesz, Ray Riesz, Geoff Rushowick, Patrick Rushowick, Dorothy Skene, Harold Wilkinson, Lloyd Wilson, Marj Wilson.

Figure 1. Location of 2005 counts (numbers correspond to those in text under Count areas and participants).

Natural Vegetation Zones*

- A. Subarctic Woodland
- B. Northern Boreal Forest
- C. Southern Boreal Forest
- D. Aspen Parkland
- E. Mixed Prairie
- F. Dry Mixed Prairie
- G. Cypress Hills

*adapted from: Thorpe, J. 1999.
 Natural Vegetation. P. 133 in
 Atlas of Saskatchewan (K. Fung, ed).
 Univ. of Sask., Saskatoon.

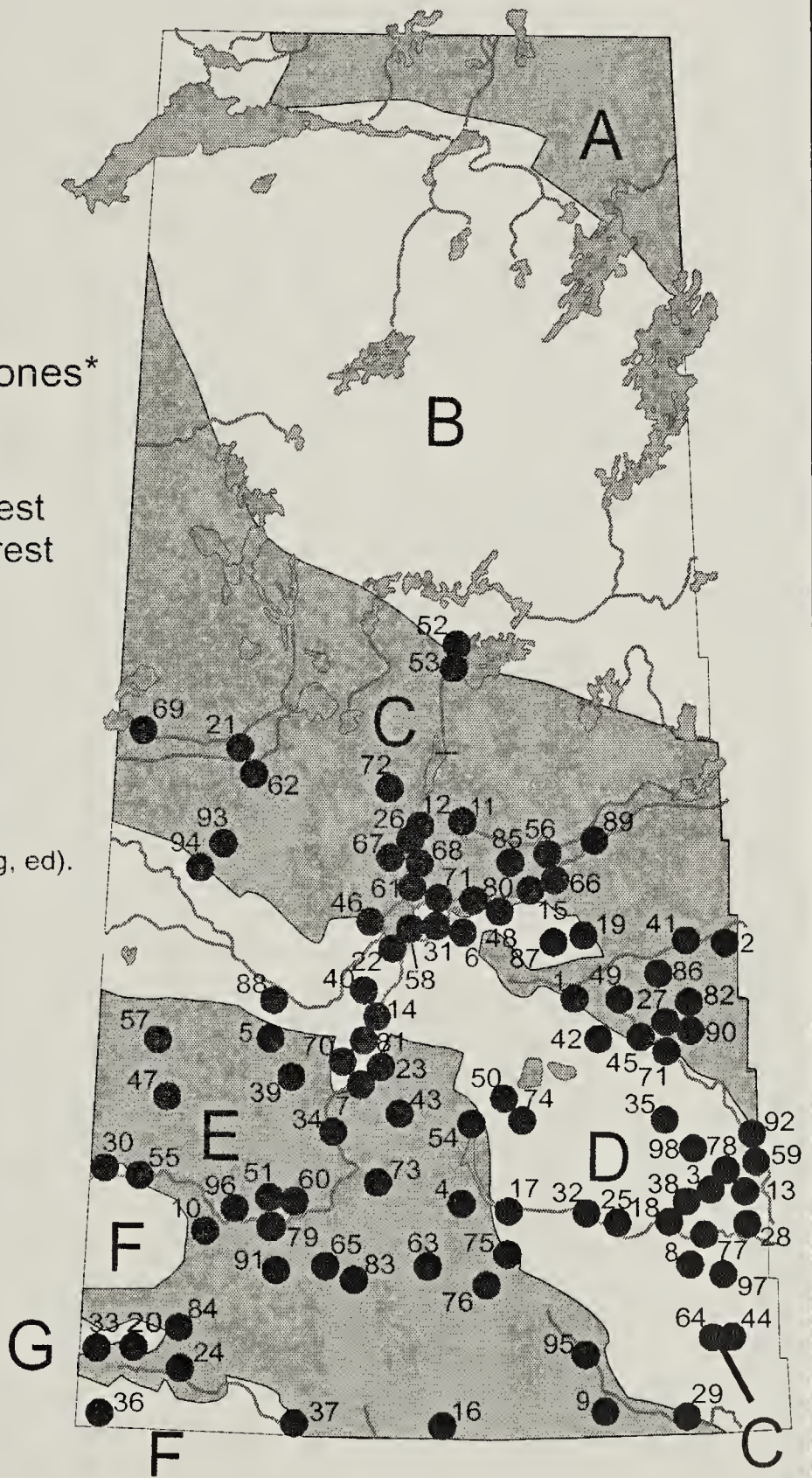


Table 1-1 Weather and Conditions

Locality	Date	Minimum Temp. (°C)	Maximum Temp. (°C)	Minimum Wind (km/hr)	Maximum Wind (km/hr)	Minimum Snow (cm)	Maximum Snow (cm)	Sky A.M.	Sky P.M.	Wild Fruit
Archerwill	Dec 19	-15	-11	10	10	10	10	overcast	overcast	p
Armit	Jan 4	-5	-3	6	30	20	50	overcast	overcast	p
Bangor	Dec 27	-5	-2	6	11	4	10	cloudy	cloudy	p
Bethune-Dilke	Jan 3	-1	1	3	6	3	3		partly cloudy	p
Biggar	Dec 27	-9	-3	0	10	0	3	overcast, fog	overcast, fog	p
Birch Hills	Dec 19	-9	-7	2	5	3	15	clear	mostly clear	p
Brightwater Res.	Dec 23	-5	0	0	2	0	5	partly cloudy	mostly clear	p
Broadview	Dec 22	-4	1	2	2	1	5	clear	cloudy	p
Bromhead	Jan 4	-10	5	0	5	0	1	clear	clear	p
Cabri	Dec 24	0	2	0	5	0	0	mostly clear	mostly clear	p
Candle Lake	Dec 29	-2	0	3	8	10	20	fog, snow	cloudy	p
Christopher Lake	Dec 15	-16	-13	6	6	10	10	partly cloudy	partly cloudy	
Churchbridge	Jan 4	-5	-3	2	5	10	25	overcast	fog	f
Clark's Crossing	Dec 17	-27	-20	0	8	2	10	clear	clear	g
Codette Lake	Dec 31	-5	-1	0	15	10	20	overcast	overcast	p
Coronach	Dec 29	-1	3	12	19	0	1	overcast	fog	p
Craven	Dec 17	-22	-18	6	11	5	25	mostly clear	mostly clear	f
Crooked Lake	Jan 3	-7	-3			0	10	mostly clear	overcast	p
Crooked River	Dec 31	-1	0	0	2	12	30	overcast	overcast	p
Cypress Hills PP	Dec 30	4	6	0	2	5	5	mostly clear	mostly clear	f
Dorintosh	Dec 29	-1	0	8	11	1	2	overcast	overcast, fog	
Duck Lake	Dec 19	-15	-10	0	5	5	10	overcast	overcast	p
Dundurn	Jan 2	-3	0	0	5	0	5	fog	partly cloudy	p
Eastend	Jan 2	-8	1	0	5	0	10	mostly clear	partly cloudy	p
Ellisboro	Dec 27	-3	-1	2	5	0	3	cloudy	mostly clear	p
Emma Lake	Dec 27	-1	1	0	5	5	10	overcast	overcast	f
Endeavour	Dec 18			3	15	15	20	overcast	overcast	p
Esterhazy	Jan 2	-23						clear	clear	
Estevan	Dec 24	-4	4	2	10	0	15	mostly clear	partly cloudy	f
Estuary North	Jan 5	-12	-2	5	5	0	5	mostly clear	mostly clear	f
Fenton	Dec 17	-31	-21	0	0	10	15	clear	clear	
Fort Qu'Appelle	Dec 17	-23	-20	0	5	10	12	partly cloudy	partly cloudy	p
Fort Walsh	Dec 17	-20	-18	0	10	0	15	clear	mostly clear	p
Gardiner Dam	Dec 19	-17	-12	0	16	0	10	clear	mostly clear	p
Good Spirit Lake	Dec 31	-4	-1	2	5	2	10	overcast	overcast	f
Govenlock	Dec 18	-20	-18	0	5	0	10	clear	clear	p
Grasslands NP	Jan 5	-10	0	0	5	0	5	partly cloudy	partly cloudy	
Grayson	Dec 21	-15	5	0	20	0	12	partly cloudy	partly cloudy	p
Harris	Jan 2	-5	-2	0	5	0	10	overcast, fog	partly cloudy	p
Hepburn	Dec 21	-5	0			6		cloudy	partly cloudy	p
Hudson Bay	Dec 31	-4	-1	2	4	30	35	overcast	overcast	p
Kelvington	Dec 30	-5	-2	0	2	15		overcast	overcast	p
Kenaston	Dec 26	-3	4	2	5	0	2	clear	partly cloudy	
Kenosee Lake	Dec 30	-4	0	0	1	0	10	overcast	overcast	f
Ketchen North	Dec 26	-12	-4	0	5	10	12	partly cloudy	partly cloudy	p
Kilwinning	Dec 19	-18	-7	5	12	2	40	mostly clear	cloudy	p
Kindersley North	Dec 26	0	2	2	5	0	0	clear	clear	
Kinistino	Jan 3	8	14	20	29	3	4	cloudy	cloudy	p
Kinloch	Dec 19	-17	-8	2	6	20	30	partly cloudy	overcast	p
Kutawagan Lake	Dec 26	0	5	0	10	0	40	cloudy	partly cloudy	p

Table 1-2 Weather and Conditions

Locality	Date	Minimum Temp. (°C)	Maximum Temp. (°C)	Minimum Wind (km/hr)	Maximum Wind (km/hr)	Minimum Snow (cm)	Maximum Snow (cm)	Sky A.M.	Sky P.M.	Wild Fruit
Kyle	Jan 2	-4	0	0	10	0	5	overcast	mostly clear	g
LaRonge North	Jan 2	-5	0	0	10	10	20	overcast	overcast	p
LaRonge South	Dec 28	-3	-3	0	0	20	26	cloudy	cloudy	f
Last Mountain Lake	Dec 27	-5	-1	0	5	0	30	fog	fog	p
Leader North	Dec 31	-18	2	25	30	0	2	light snow	light snow	g
Love-Torch River	Dec 29	-10	-4	0	0	20	30	overcast	overcast	p
Luseland	Jan 1	-4	-2	0	10	0	4	fog	fog	p
MacDowall	Dec 29	-5	-1	0	8	8	12	cloudy	cloudy	
MacNutt	Dec 28	-2	-2	0		15	20	overcast, fog	overcast, fog	p
Matador	Dec 28	-5	3	0	20	0	1	fog	partly cloudy	p
Mayview	Jan 5	-9	-3	3	8	6	10	overcast, fog	overcast	p
Meadow Lake	Dec 26	-2	-2	0	0	1	5	mostly clear	mostly clear	p
Moose Jaw	Dec 26	2	5	0	1	0	1	clear	clear	p
Moose Mountain	Dec 21	-8	-2	10	25	0	8	partly cloudy	mostly clear	p
Morse	Dec 17	-23	-17	5		10	15	clear	clear	g
Nipawin	Dec 30	-4	-2		10	10	25	overcast, snow	overcast	f
Nisbet Forest NW	Dec 23	-10	2	0	0	5	14	overcast, fog	mostly clear	p
Nisbet Forest West	Jan 1	-5	-2	2	5	12	14	overcast, fog	overcast	
Pierce Lake	Dec 29	-2	-1	0	6	1	4			
Pike Lake	Jan 2	-5	-2	0	9	8	30	fog	partly cloudy	p
Prince Albert	Dec 18	-25	-13	10	10	10	15	clear	clear	p
Prince Albert NP	Dec 15	-16	-12	15	30	5	30	partly cloudy		
Qu'Appelle Dam	Dec 18	-25	-9	6	19	5	15	mostly clear	mostly clear	f
Raymore	Jan 2	-4	-1	20	40	1	40	overcast	overcast	p
Regina	Dec 26	-4	3	9	17	0	30	clear	partly cloudy	f
Rouleau	Jan 1	-7	-5	15	35	0	5	overcast	overcast	p
Round Lake	Dec 27	-2	1	0	10	2	12	overcast, rain	clear	p
Saltcoats	Jan 4	-7	-7	0	8	0	7	fog	fog	p
Sask. Landing PP	Dec 20	-13	-1	0	2	2	5	mostly clear	cloudy	p
Sask. R. Forks	Dec 28	-3	-1	0	3	10	15	cloudy, fog	cloudy, fog	p
Saskatoon	Dec 26	-5	4	0	13	5	15	clear	partly cloudy	f
Sawyer Lake	Dec 31	-6	-2	10		20		partly cloudy	partly cloudy	p
Shamrock	Dec 17	-18	-16	10	20	4	14	clear	clear	
Skull Creek	Dec 28	2	5	0	3	0	0	clear	clear	f
Snowden	Dec 30	-4	-3	0	0	8	15	cloudy	fog	p
Somme	Dec 21	-13	-10	0	5	25	30	overcast	overcast	p
Spalding	Dec 27	0	0	0	0	6	8	cloudy		f
Spinney Hill	Dec 16	-19	-17	15	20	3	35	mostly clear	partly cloudy	f
Squaw Rapids	Jan 5	-5	-4	10	20	20	30	overcast	overcast	p
Stenen	Jan 2	-6	-4	30	39	15	20	overcast, snow	overcast	p
Swift Current	Dec 31	-3	-1	17	26	0	2	partly cloudy	partly cloudy	
Togo	Jan 3	-4	-2	2	5	5	10	fog	fog	f
Turtle Lake									overcast, snow	f
Turtleford	Dec 29	-4	-2	0	5	1	2	fog	fog	f
Weyburn	Dec 15	-18	-20	15	15	3	3	mostly clear	mostly clear	p
White Bear	Dec 27	-3	4	0	0	0	0	mostly clear	mostly clear	
Whitewood	Jan 1	-5	-3	20	30	0	15	overcast	overcast	p
Yorkton	Dec 19	-14	-5	2	20	2	16	clear	mostly clear	f

wild fruit crop: poor, fair, good, excellent

Table 2-1 Coverage

Locality	Effort						Habitat													
	Participants	Km on Foot	Hours on Foot	Km by Vehicle	Hours by Vehicle	Hours at Feeders	Evergreen Forest	Mixed Forest	Deciduous Forest	Aspen / Farmland	Aspen / Prairie	Native Prairie	Tame Pasture	Farmland	Farmstead	Urban	Open Water	Frozen Lake	Riparian	Landfill
Archerwill	14	2.0	1.0	150	4.5			30					5	50	10	4	1			
Armit	3	1.5	1.0	252	7.5	1.0	15	40		20					10	15				
Bangor	8		8.0	23	4.0	12			25			25		50						
Bethune-Dilke	2			30	3.0				10		40		40	10						
Biggar	11	5.0	10	177	15	6.0			13				41		46					
Birch Hills	4	3.5	1.5	108	4.8	1.5			5	75			5	10		5				
Brightwater Res.	2	5.0	1.7	107	6.0				20	10	10	10	10	25	10		5			
Broadview	4	2.0	1.0	132	5.0	1.0			20	40		5		25	5	5				
Bromhead	2	2.0	1.0	140	6.0						2	3	90	5						
Cabri	1	1.0	0.5	113	3.0				5		10		65	10	10					
Candle Lake	3	4.0	2.5	186	8.5		25	30	30						15					
Christopher Lake	1	6.0	3.0			1.0		100												
Churchbridge	9	8.0	7.0	80	5.5	3.0			5	55	5		10	20	5					
Clark's Crossing	28	23	18	568	26				40	2	1	1	5	27	15	2		7		
Codette Lake	4	2.5	1.5	140	5.5		5	10	20	15	15			10	20		5			
Coronach	2	2.0	0.5	145	5.0						20	15	50	5	5	5				
Craven	18	7.0	2.0	370	20	2.0			25	20		10	10	10	25					
Crooked Lake	2	1.0	1.0	127	4.0				40	30				10		20				
Crooked River	2	0.5	0.5	30		3.0		35					40	25						
Cypress Hills PP	17	20	5.0	50	4.0	2.0	60	20		10				10						
Dorintosh	2	5.0	2.5	30	2.0															
Duck Lake	3	7.0	2.5	85	5.5		5	35	10	15	5			20		10				
Dundurn	2	1.0	0.5	121	8.0				5	10	10	10		50	5	10				
Eastend	8						5				25	10	20	20	5	10	5			
Ellisboro	2	5.0	1.5	84	3.5	1.5			25					20	5				50	
Emma Lake	2	2.0	1.0	40	4.0	3.0		100												
Endeavour	1		2.0	62	3.0	1.0			60					20	20					
Esterhazy	4																			
Estevan	6	4.0	2.8	371	15				20				40	5	15	20				
Estuary North	4	7.0	3.0	100	18	1.0			20		50		25	5						
Fenton	3	1.0	0.8	87	5.0															
Fort Qu'Appelle	13	5.0	2.0	121	8.0	7.0			10	10				20	10	30	20			
Fort Walsh	10	29	19	327	14			32			3		16						49	
Gardiner Dam	10	29	14	577	24				1				63			24		12		
Good Spirit Lake	9			129	9.0	1.0		5	5	5	5	5	30	5	40					
Govenlock	12	7.5	5.5	505	19						35		35	25		5				
Grasslands NP	9	5.0	1.5	125	3.5						75	10	10		5					
Grayson	6	8.0	9.0	45	18	2.0			20	20			30	10	10	10				
Harris	4	3.0	2.0	193	7.0				28				64		8					
Hepburn	1	2.0	0.5	45	1.5	1.0			90						10					
Hudson Bay	9	1.0	2.0	16	1.0	10		60					10	10	20					
Kelvington	3	1.0	1.0		1.0	1.0			30				60	10						
Kenaston	2			64	4.0	0.5			90	5				5						
Kenosee Lake	2			104	5.5	0.5		5	40	10	5				40					
Ketchen North	1	0.5	1.0	50	1.5	6.5			30			20	20	20	10					
Kilwinning	3	2.0	0.8	134	7.0		9	6	30	50		5								
Kindersley North	3	2.0		70	4.0									8	30	60	2			
Kinistino	2	5.0	5.0			1.0		40				50	10							
Kinloch	6	12	5.0	125	4.0	9.0		40	30	10				20						
Kutawagan Lake	2	0.5	0.5	194	8.0	0.3			20		15		40	10	15					

Table 2-2 Coverage

Locality	Effort						Habitat													
	Participants	Km on Foot	Hours on Foot	Km by Vehicle	Hours by Vehicle	Hours at Feeders	Evergreen Forest	Mixed Forest	Deciduous Forest	Aspen / Farmland	Aspen / Prairie	Native Prairie	Tame Pasture	Farmland	Farmstead	Urban	Open Water	Frozen Lake	Riparian	Landfill
Kyle	8	18	7.0	533	21					2	26	5	63	1	1				2	
LaRonge North	9	9.0	3.5	41	2.5	15	4													
LaRonge South	5	30	9.0	60	2.0	4.5		50						20	20					10
Last Mountain Lake	6	0.5	0.5	181	7.5	0.7			20	10		40	10	20						
Leader North	1	5.0	4.0	40	2.0	1.5					50	10	30	10						
Love-Torch River	16	6.0	2.0	306	16	10	10	10	60				10	10						
Luseland	7	11	4.5	181	5.0	2.0			40	15	5	5	5	30						
MacDowall	4	2.0	2.0	40	1.0	3.0		15	10	50		10		15						
MacNutt	3				6.0				30			30	40							
Matador	2	5.0	2.5	100	5.5					18	80	1	1							
Mayview	1				6.5		100													
Meadow Lake	4	8.0	2.0	180	3.0	5.0		40					30		30					
Moose Jaw	18	27	12	138	7.5	14	4	5			10			1	80					
Moose Mountain	4	5.0	1.2	133	4.5				30	30			30		10					
Morse	9	1.0	0.5	283	12	0.3					5	4	79	3	1		8			
Nipawin	17	10	7.0	152	7.0	13		10					10	5	67	5				3
Nisbet Forest NW	2	3.0	1.8		3.0			38						62						
Nisbet Forest West	7		1.0		4.0	3.0	5	30	5	10			50							
Pierce Lake	2	2.5	1.2	107	5.1															
Pike Lake	37	30	36	378	18				15	10		5	15	15	40					
Prince Albert	14	35	12	370	17															
Prince Albert NP	16	41	26	35			95								5					
Qu'Appelle Dam	9	8.0	8.0	433	12				15	15	20	10	5	15	5	10	5			
Raymore	2	0.5	0.5	81	8.5	0.5			25				40	10	25					
Regina	32	109	30	512	19	6.0			5	10	5		10	30	10	30				
Rouleau	6	2.5	2.0	97	4.5	4.0							85	5	10					
Round Lake	3			194	6.5	1.0			30	30			20			20				
Saltcoats	10	1.5	2.0	221	45	15			95						5					
Sask. Landing PP	6	13	9.0	418	5.3						20		70	10						
Sask. R. Forks	2	3.0	2.0	87	4.5		15	20	15	10			10	15	10		5			
Saskatoon	111	148	83	823	45	130			1	4	13	1		6	14	53	3		3	2
Sawyer Lake	6	18	20		8.0		10	90												
Shamrock	4			206	9.5								95	5						
Skull Creek	4	5.0	2.0	60	4.0				10	10	10	60	10							
Snowden	12		1.5	90	3.5	2.5		20					20	50	10					
Somme	13	4.0	1.0	180	8.0	8.0		20	20	20			20	10	10					
Spalding	4		1.0		5.0	4.0			10	40			25		25					
Spinney Hill	2	2.0	0.8	135	6.0			12	38	30	10		20							
Squaw Rapids	4	8.5	7.0	264	13	0.3	10	55					15	10		10				
Stenen	2				3.0															
Swift Current	41	66	29	321	20	53					15	5	60	5	10	5				
Togo	9	4.0	2.0	25	1.0	40	5	25	25	10	10	10	15							
Turtle Lake	1																			
Turtleford	6	9.0	5.0	152	6.0	9.0			70				20	10						
Weyburn	5	2.0	0.5	192	18															
White Bear	3				4.0						50		40	10						
Whitewood	23	2.5	2.0	266	9.5	38			20				10	70						
Yorkton	17			205	15	2.0			5	3	2	35	5	50						

Table 3-1 Species found in 8 or more localities () = seen during count period

Aves	Archerwill 19 Dec 2005	Armit 4 Jan 2006	Bangor 27 Dec 2005	Bethune-Dike 3 Jan 2006	Biggar 27 Dec 2005	Birch Hills 19 Dec 2005	Brightwater Res. 23 Dec 2005	Broadview 22 Dec 2005	Bromhead 4 Jan 2006	Cabri 24 Dec 2005	Candle Lake 29 Dec 2005	Christopher Lake 15 Dec 2005
Canada Goose			2									
Mallard										(2)		
Common Goldeneye												
Gray Partridge	10			20		1		4		6		
Ring-necked Pheasant									1			
Ruffed Grouse	5	1	1			1		1			1	
Sharp-tailed Grouse	10		26		20			9	46			
Bald Eagle	(3)					2						
Northern Goshawk											1	
Golden Eagle	(1)								1			
Merlin												
Prairie Falcon							(1)		1			
Rock Pigeon			6	15	141	165	28	76	12	24		
Great Horned Owl			2		1	1	2		3	2		
Snowy Owl	(1)		1	2			1			2		
Short-eared Owl												
Downy Woodpecker	7	2	5		2	3		1	1	1	1	
Hairy Woodpecker	12	2	8		3	5	2	(1)			2	
Am. Three-toed Woodpecker											1	
Northern Flicker												
Pileated Woodpecker			1					1			1	
Northern Shrike						1						
Gray Jay	3	5									3	
Blue Jay	16	15			4	3		4			3	3
Black-billed Magpie	21	37	27	7	52	42	45	23	2	18	4	
Common Raven	56	94	15		8	21	10	9			230	4
Horned Lark					(1)	4	14			10		
Black-capped Chickadee	26	12	46		42	44	4	15		1	27	6
Boreal Chickadee	5	1	2		6			(1)			24	
Red-breasted Nuthatch	1				7						2	
White-breasted Nuthatch	4		1		(1)	1		(1)				
Brown Creeper												
Golden-crowned Kinglet												
American Robin												
European Starling						54	11	2	37	10		
Bohemian Waxwing					36							
Dark-eyed Junco					(1)							
Snow Bunting	200	1			11	203	502	300			4	
Pine Grosbeak	2	3										
House Finch					83	10		8				
Common Redpoll			2									
Pine Siskin			1		4							
American Goldfinch						(14)						
Evening Grosbeak	55	50									8	48
House Sparrow	10	10	119	50	405	189	55	226	202	154		
Total Birds Count Day	443	235	267	94	826	751	677	690	474	228	314	61
Extra Birds Count Period	8				3	14	1	3		2		
Total Species Count Day	17	14	19	5	17	19	13	16	11	10	17	4
Extra Species Count Period	6				3	1	1	3		1		

Table 3-2 Species found in 8 or more localities () = seen during count period

Aves	Churchbridge 4 Jan 2006	Clark's Crossing 17 Dec 2005	Codette Lake 31 Dec 2005	Coronach 29 Dec 2005	Craven 17 Dec 2005	Crooked Lake 3 Jan 2006	Crooked River 31 Dec 2005	Cypress Hills PP 30 Dec 2005	Dorintosh 29 Dec 2005	Duck Lake 19 Dec 2005	Dundurn 2 Jan 2006	Eastend 2 Jan 2006
Canada Goose		1310		696		607						
Mallard				2067		10						3
Common Goldeneye		5		2								
Gray Partridge		41		26	4							
Ring-necked Pheasant					3							24
Ruffed Grouse	6	(1)	1									1
Sharp-tailed Grouse	29	45	7	20	47			1			18	
Bald Eagle		3	2	2		1			1			
Northern Goshawk			1			1				1		
Golden Eagle											1	1
Merlin					1							1
Prairie Falcon				1								
Rock Pigeon	5	295		52	6	32		4		30	14	21
Great Horned Owl	3	7	1	2	2							1
Snowy Owl	1	4		1	1							1
Short-eared Owl												
Downy Woodpecker	6	13			4	1	3	5	1			17
Hairy Woodpecker	6	17			13		(2)	5	5	3		2
Am. Three-toed Woodpecker			1							1		
Northern Flicker					1							1
Pileated Woodpecker	1									1		
Northern Shrike		1		2	1	1				1		
Gray Jay	2		2						10	1		
Blue Jay		2	8		17	7	(1)	2	4			
Black-billed Magpie	15	334	19	13	59	16	2	25	1	12	40	99
Common Raven	23	10	56		9	7	23		6	16	19	
Horned Lark		3		37	1			1			5	6
Black-capped Chickadee	47	127	8		117	69	9	48	20	10	22	41
Boreal Chickadee		1								5		
Red-breasted Nuthatch					4			15			1	1
White-breasted Nuthatch	4				8	10					1	
Brown Creeper								3				
Golden-crowned Kinglet					2							
American Robin					1							
European Starling		25									4	
Bohemian Waxwing	1	1145			18						2	
Dark-eyed Junco					1							
Snow Bunting	100	39			566			2		2	11	40
Pine Grosbeak	10		1						10			
House Finch		1			5							37
Common Redpoll					1							
Pine Siskin												
American Goldfinch					17							
Evening Grosbeak			12				16		50	3		
House Sparrow	125	2104		35	268	15		10		90	161	98
Total Birds Count Day	386	5533	120	2958	1199	781	53	129	108	176	300	397
Extra Birds Count Period		1					3					
Total Species Count Day	18	23	14	16	29	14	5	13	10	14	14	20
Extra Species Count Period		1					2					

Table 3-3 Species found in 8 or more localities () = seen during count period

Aves	Ellisboro 27 Dec 2005	Emma Lake 27 Dec 2005	Endeavour 18 Dec 2005	Esterhazy 2 Jan 2006	Estevan 24 Dec 2005	Estuary North 5 Jan 2006	Fenton 17 Dec 2005	Fort Qu'Appelle 17 Dec 2005	Fort Walsh 17 Dec 2005	Gardiner Dam 19 Dec 2005	Good Spirit Lake 31 Dec 2005	Govenlock 18 Dec 2005
Canada Goose					17298			2900		4150		
Mallard					178		1	26	8	15500		
Common Goldeneye					58			3		94		
Gray Partridge						2	1		8	36		6
Ring-necked Pheasant					46	23			7			3
Ruffed Grouse		3	(2)					1	1		1	
Sharp-tailed Grouse	14			3	(10)	23		(3)	131	28		32
Bald Eagle	1			(1)	(1)	1		3	6	29		
Northern Goshawk	(1)								1			
Golden Eagle					(1)	2			3	3		
Merlin												
Prairie Falcon										2		3
Rock Pigeon	49		11	7	117		10	1		111		
Great Horned Owl					2	5	2	1	2	8	2	6
Snowy Owl				(1)	2	1				7		1
Short-eared Owl					1					1		1
Downy Woodpecker	1	5	(1)	(2)	1	3	4	2	14	2	5	
Hairy Woodpecker	1	7	3	(2)	2	2	5	2	9	1	6	
Am. Three-toed Woodpecker									5			
Northern Flicker					1	2						
Pileated Woodpecker			(1)								2	
Northern Shrike					(1)			(1)				2
Gray Jay		2	(1)									
Blue Jay		12	3	(1)	1	4		4		7	22	
Black-billed Magpie	13		4	6	71	64	71	27	258	168	22	20
Common Raven	17	40	60	14			32	9	6	5	25	
Horned Lark					2	27	9		58	44		235
Black-capped Chickadee	3	115	17	2	30	13	24	47	68	20	30	
Boreal Chickadee		20		(1)				1				
Red-breasted Nuthatch		3	(2)	(1)	1			2	3	1	1	
White-breasted Nuthatch	(4)	7	(2)	(1)	9			4		1	1	
Brown Creeper		1								1		
Golden-crowned Kinglet								(2)	31	1		
American Robin									1			
European Starling					67			20	6			2
Bohemian Waxwing					5	250	1	20		20		
Dark-eyed Junco			(6)		(1)	3			6			
Snow Bunting			50			218	101	80	230	110		2
Pine Grosbeak											2	
House Finch					19			(1)		3		
Common Redpoll			20						3			2
Pine Siskin					(4)			1				
American Goldfinch	6				18			(5)				
Evening Grosbeak		50	19									
House Sparrow	16		16	4	355	69	79	99	176	842	10	86
Total Birds Count Day	121	278	203	36	18356	712	340	3256	1150	21460	140	402
Extra Birds Count Period	8		16	15	19			19				
Total Species Count Day	10	14	10	6	31	18	13	23	33	40	14	15
Extra Species Count Period	3		8	9	7			10				

Table 3-4 Species found in 8 or more localities () = seen during count period

Aves	Grasslands NP 5 Jan 2006	Grayson 21 Dec 2005	Harris 2 Jan 2006	Hepburn 21 Dec 2005	Hudson Bay 31 Dec 2005	Kelvington 30 Dec 2005	Kenaston 26 Dec 2005	Kenosee Lake 30 Dec 2005	Ketchen North 26 Dec 2005	Kilwinning 19 Dec 2005	Kindersley North 26 Dec 2005	Kinistino 3 Jan 2006
Canada Goose		651										
Mallard		64										
Common Goldeneye		5										
Gray Partridge			11	(7)		10	15			8	15	
Ring-necked Pheasant												
Ruffed Grouse		1				1			7	5		1
Sharp-tailed Grouse	1	13	15				27			7		
Bald Eagle		2	1									
Northern Goshawk		1										
Golden Eagle	1		1								1	
Merlin												
Prairie Falcon	1											
Rock Pigeon	41	73	97		19		8	4	7	19	55	
Great Horned Owl	1		2					2		1	1	
Snowy Owl	1		2		(1)		1				1	
Short-eared Owl			1									
Downy Woodpecker	1	2	1		3	5		6	4			1
Hairy Woodpecker		2			4	4		4	4	1		
Am. Three-toed Woodpecker												
Northern Flicker												
Pileated Woodpecker					1	(1)						1
Northern Shrike									1	1		
Gray Jay					5					1		2
Blue Jay		4	(1)		13	9	3	18	5	18		5
Black-billed Magpie	16	15	61	2	9	4	26	20	10	87	17	10
Common Raven		9	24	6	152	4	3	5	23	47		2
Horned Lark			5				6				1	
Black-capped Chickadee		20	15	(4)	43	15	3	102	10	32		8
Boreal Chickadee					3	2		9		3		
Red-breasted Nuthatch				1	(2)			11		1		
White-breasted Nuthatch		3			3			10	(1)	2		
Brown Creeper								1				
Golden-crowned Kinglet								1				
American Robin												
European Starling			6									
Bohemian Waxwing			1	13		3					3	
Dark-eyed Junco					1							
Snow Bunting	8		22	(10)	5	100	3000			120	(200)	
Pine Grosbeak					25	1				20		
House Finch	10											
Common Redpoll				(1)	(1)					3		
Pine Siskin				1				10		2		
American Goldfinch								21				
Evening Grosbeak					129				3	17		9
House Sparrow	43	10	285	(4)	8		52	52	52	171	20	
Total Birds Count Day	126	882	550	23	424	158	3145	276	127	596	114	40
Extra Birds Count Period			1	27	6	1			1		200	
Total Species Count Day	13	19	17	5	17	12	12	16	12	22	9	10
Extra Species Count Period			1	6	5	1			1		1	

Table 3-5 Species found in 8 or more localities () = seen during count period

Aves	Kinloch 19 Dec 2005	Kutawagan Lake 26 Dec 2005	Kyle 2 Jan 2006	LaRonge North 2 Jan 2006	LaRonge South 28 Dec 2005	Last Mountain Lake 27 Dec 2005	Leader North 31 Dec 2005	Love-Torch River 29 Dec 2005	Luseland 1 Jan 2006	MacDowall 29 Dec 2005	MacNutt 28 Dec 2005
Canada Goose											
Mallard											
Common Goldeneye											
Gray Partridge		28	15			5	10	(14)	(5)	21	
Ring-necked Pheasant							5				
Ruffed Grouse					(3)			2		2	
Sharp-tailed Grouse		29	70			40	7	5	1	15	24
Bald Eagle	1							(1)		(1)	1
Northern Goshawk	1				(1)					2	
Golden Eagle			2				1				
Merlin											
Prairie Falcon			(1)								
Rock Pigeon	(2)	14	336			4	16	3	22	15	
Great Horned Owl		1	18		(1)	1	1		2	1	
Snowy Owl		3	(1)			(1)	1		(2)		
Short-eared Owl		1				2					
Downy Woodpecker	6		1	5	2	2	1	4		3	
Hairy Woodpecker	7	1		3	3			2		3	1
Am. Three-toed Woodpecker				2	1						
Northern Flicker											
Pileated Woodpecker							1	2		1	
Northern Shrike						(1)					1
Gray Jay	8			7	10			6		2	
Blue Jay	17		3	4	4		2	14		4	3
Black-billed Magpie	22	46	115			9	12	38	44	7	26
Common Raven	32	18	2	102	418	2		460	1	9	73
Horned Lark			11			8			16		
Black-capped Chickadee	38	1	5	51	18	2	2	32	7	25	15
Boreal Chickadee	3			19	12				1		
Red-breasted Nuthatch					2	2		3	(2)		
White-breasted Nuthatch	3							1			
Brown Creeper					1						
Golden-crowned Kinglet											
American Robin						1			(1)		
European Starling		21	5	4		(1)		15			
Bohemian Waxwing		8	34	2			30	10	51	20	
Dark-eyed Junco								2			
Snow Bunting	35	2453	4			1049		207	932	60	
Pine Grosbeak	4			10	8						
House Finch			(8)					(3)	10		
Common Redpoll											
Pine Siskin	(3)			6				(2)			
American Goldfinch											
Evening Grosbeak	53			53	11			77		8	
House Sparrow	(3)	96	1123			210	25	147	33		
Total Birds Count Day	231	2720	1751	268	490	1338	117	1033	1123	199	144
Extra Birds Count Period	8		10		6	3		20	10	1	
Total Species Count Day	15	14	18	13	12	15	16	22	13	18	8
Extra Species Count Period	3		3		4	3		4	4	1	

Table 3-6 Species found in 8 or more localities () = seen during count period

Aves	Matador 28 Dec 2005	Mayview 5 Jan 2006	Meadow Lake 26 Dec 2005	Moose Jaw 26 Dec 2005	Moose Mountain 21 Dec 2005	Morse 17 Dec 2005	Nipawin 30 Dec 2005	Nisbet Forest NW 23 Dec 2005	Nisbet Forest West 1 Jan 2006	Pierce Lake 29 Dec 2005	Pike Lake 2 Jan 2006
Canada Goose										25	
Mallard										84	
Common Goldeneye										10	1
Gray Partridge				25		119	37				
Ring-necked Pheasant				5							
Ruffed Grouse		3					3	4	(2)		6
Sharp-tailed Grouse	20					65				22	5
Bald Eagle							(1)		1	4	1
Northern Goshawk					1		1				1
Golden Eagle	1					(1)					
Merlin						1					1
Prairie Falcon	(1)										
Rock Pigeon			16	827		30	5	(24)	22		13
Great Horned Owl	(1)			3		4	1		(1)		2
Snowy Owl	1			2		3		(1)			
Short-eared Owl						1					
Downy Woodpecker			(1)	10	3	(2)	4	2	(1)		27
Hairy Woodpecker				2	4		3	2	(1)		29
Am. Three-toed Woodpecker											
Northern Flicker				2							3
Pileated Woodpecker											
Northern Shrike											1
Gray Jay		2	1				9	(1)	(1)		
Blue Jay					10		7	5	5	3	52
Black-billed Magpie	2		11	36	24	12	36	1	14	21	133
Common Raven		2	72		10		155	8	27	28	140
Horned Lark						876					26
Black-capped Chickadee		4	8	19	42	2	31	18	21	9	303
Boreal Chickadee		2								5	2
Red-breasted Nuthatch			2	10			2	(1)			
White-breasted Nuthatch			1	3	2		1	2	(1)		29
Brown Creeper											
Golden-crowned Kinglet											
American Robin											
European Starling				3							
Bohemian Waxwing	16		6		51	29	5				227
Dark-eyed Junco				4		(1)					
Snow Bunting	237					437			(100)		189
Pine Grosbeak		1							(1)		
House Finch			9	8		2					
Common Redpoll						(1)	5				
Pine Siskin						3					
American Goldfinch					5	(1)	1				
Evening Grosbeak							106	20	7		1
House Sparrow				334	144	613	216				323
Total Birds Count Day	277	14	126	1323	298	2199	632	62	97	211	1576
Extra Birds Count Period	2		1			7	1	28	108		
Total Species Count Day	6	6	9	17	13	16	22	9	7	10	26
Extra Species Count Period	2		1			6	1	5	8		

Table 3-7 Species found in 8 or more localities () = seen during count period

Aves	Prince Albert 18 Dec 2005	Prince Albert NP 15 Dec 2005	Qu'Appelle Dam 18 Dec 2005	Raymore 2 Jan 2006	Regina 26 Dec 2005	Rouleau 1 Jan 2006	Round Lake 27 Dec 2005	Saltcoats 4 Jan 2006	Sask. Landing PP 20 Dec 2005	Sask. R. Forks 28 Dec 2005	Saskatoon 26 Dec 2005
Canada Goose			1200		2209		363				2071
Mallard			148		40		28				31
Common Goldeneye			125								309
Gray Partridge			5	16	167				53		43
Ring-necked Pheasant					3				20		
Ruffed Grouse		2		(1)				7			1
Sharp-tailed Grouse	9		51	14	61		18	15	49		13
Bald Eagle	1		5				1	(1)	2		
Northern Goshawk					1				1		1
Golden Eagle			3						2		
Merlin	(1)				1						4
Prairie Falcon			1						1		
Rock Pigeon	347		31	91	1066	2	8	10	93		2391
Great Horned Owl			2	1	8	2		2	4		5
Snowy Owl			4		18	1			1		
Short-eared Owl			5								1
Downy Woodpecker	4	1			18		1	12	2	2	17
Hairy Woodpecker	5	1	5		8		1	9	1	5	18
Am. Three-toed Woodpecker		1									
Northern Flicker					7	(1)			1		16
Pileated Woodpecker		1								2	1
Northern Shrike											1
Gray Jay		8								2	
Blue Jay	4						2	8		5	73
Black-billed Magpie	73	10	115	39	86		19	49	130	16	634
Common Raven	188	44	11	12	9		14	78		15	15
Horned Lark	2		25	30					140		
Black-capped Chickadee	48	17	31	16	53		47	66	7	32	695
Boreal Chickadee	1	31		1	2					12	3
Red-breasted Nuthatch		1	2		45						85
White-breasted Nuthatch			1		6		5	4	2		7
Brown Creeper					10						3
Golden-crowned Kinglet					8					2	4
American Robin	2				1			(1)			13
European Starling				6	77						13
Bohemian Waxwing	3693		50		198				224		3914
Dark-eyed Junco					20			1			1
Snow Bunting	84		177	500	40	700		300	50	1	
Pine Grosbeak	(1)										2
House Finch			8		199						466
Common Redpoll								9	16		
Pine Siskin								1			
American Goldfinch					11			1			2
Evening Grosbeak	45	3								8	
House Sparrow	148		359	745	1389	100	138	122	257	13	3840
Total Birds Count Day	4656	121	2398	1471	5775	806	646	702	1056	115	14708
Extra Birds Count Period	2			1		1		2			5
Total Species Count Day	18	13	28	12	36	6	14	18	21	13	40
Extra Species Count Period	2			1		1		2			2

Table 3-8 Species found in 8 or more localities () = seen during count period

Aves	Sawyer Lake 31 Dec 2005	Shamrock 17 Dec 2005	Skull Creek 28 Dec 2005	Snowden 30 Dec 2005	Somme 21 Dec 2005	Spalding 27 Dec 2005	Spinney Hill 16 Dec 2005	Squaw Rapids 5 Jan 2006	Stenen 2 Jan 2006	Swift Current 31 Dec 2005	Togo 3 Jan 2006
Canada Goose											
Mallard										13	
Common Goldeneye								35			
Gray Partridge		33	23		24					54	
Ring-necked Pheasant			2							13	
Ruffed Grouse				5	(1)	(1)					2
Sharp-tailed Grouse		4	60		20			34		8	
Bald Eagle			3		3			18		1	
Northern Goshawk											
Golden Eagle		1	2								
Merlin										2	
Prairie Falcon											
Rock Pigeon		25		7	6	4				887	3
Great Horned Owl	1	6	2		1		1	1		4	
Snowy Owl			3		1	3				9	
Short-eared Owl											
Downy Woodpecker			2	5	2		1	3	2	11	7
Hairy Woodpecker	1			4	3			7	2		10
Am. Three-toed Woodpecker							1				
Northern Flicker										2	
Pileated Woodpecker					(1)		2	1	2		
Northern Shrike			1								
Gray Jay	1				2			7	4		
Blue Jay	1		2	11	7	2	7	9	4	(1)	24
Black-billed Magpie		16	30	18	64	2	44	27	6	87	3
Common Raven	6			83	118	10	17	64	25		3
Horned Lark		540	200		4		5			35	
Black-capped Chickadee	3		25	70	33	4	18	31	8	3	81
Boreal Chickadee				6	3			11			
Red-breasted Nuthatch						2	1			32	1
White-breasted Nuthatch					5	1		2			7
Brown Creeper										3	
Golden-crowned Kinglet										12	
American Robin											
European Starling		3			10			6		1	
Bohemian Waxwing										3	
Dark-eyed Junco			1			1				13	
Snow Bunting		65			452		36				
Pine Grosbeak				30	20			4			
House Finch										144	
Common Redpoll							6				
Pine Siskin											
American Goldfinch											
Evening Grosbeak	3			67	33			18	1		81
House Sparrow		315	20		106	4	41	30		2372	12
Total Birds Count Day	16	1008	451	307	917	33	260	328	54	3744	234
Extra Birds Count Period					4	1				2	
Total Species Count Day	7	10	17	12	21	10	14	24	9	29	12
Extra Species Count Period					4	1				2	

Table 3-9 Species found in 8 or more localities () = seen during count period

Aves	Turtle Lake	Turtleford 29 Dec 2005	Weyburn 15 Dec 2005	White Bear 27 Dec 2005	Whitewood 1 Jan 2006	Yorkton 19 Dec 2005	Totals Count Day	Extras Count Period	# of Counts Seen Count Day	# of Counts Seen Count Period
Canada Goose							33482		13	13
Mallard						19	18220	2	16	17
Common Goldeneye							647		11	11
Gray Partridge			10	47	13		972	26	38	41
Ring-necked Pheasant			4				159		14	14
Ruffed Grouse	3	1			(1)		80	12	31	39
Sharp-tailed Grouse	4	2	12	7	22		1278	13	53	55
Bald Eagle							96	9	26	33
Northern Goshawk							15	2	14	16
Golden Eagle				1			27	3	17	20
Merlin			1		(1)		12	2	8	10
Prairie Falcon							10	3	7	10
Rock Pigeon		76	360	65	93	662	9105	26	66	68
Great Horned Owl	2				1	1	140	3	52	55
Snowy Owl		(1)	1	2			83	9	32	40
Short-eared Owl							14		9	9
Downy Woodpecker	3	4	1		6	1	308	7	68	73
Hairy Woodpecker	2	7	1		3	3	298	6	62	66
Am. Three-toed Woodpecker							13		8	8
Northern Flicker							36	1	10	11
Pileated Woodpecker	2				(1)		24	4	18	22
Northern Shrike		1					16	3	14	17
Gray Jay	2						107	3	26	29
Blue Jay	20	2			1	2	533	4	60	64
Black-billed Magpie	5	42	7	16	49	22	4132		91	91
Common Raven	10	5			32	76	3493		76	76
Horned Lark			201		4		2591	1	34	35
Black-capped Chickadee	25	15	2		118	70	3529	4	87	88
Boreal Chickadee					1		197	2	30	32
Red-breasted Nuthatch	1				14		260	8	32	37
White-breasted Nuthatch	2	(1)	1		2	4	160	12	38	46
Brown Creeper							23		8	8
Golden-crowned Kinglet			1				62	2	9	10
American Robin							19	2	6	8
European Starling		1	6	26	8	36	485	1	29	30
Bohemian Waxwing						794	10883		34	34
Dark-eyed Junco			8		3		65	9	14	18
Snow Bunting		600	266		1340	250	16491	310	52	55
Pine Grosbeak	15					(1)	168	3	18	21
House Finch		12	6		78	(2)	1118	14	20	24
Common Redpoll							67	3	10	13
Pine Siskin			1		22		52	9	11	14
American Goldfinch			5		35	6	128	20	12	15
Evening Grosbeak	25						1089		33	33
House Sparrow		65	142	82	536	378	21249	7	73	75
Total Birds Count Day	122	833	1096	246	2381	2326	133154			
Extra Birds Count Period		37			33	3		644		
Total Species Count Day	16	14	22	8	21	16	99			
Extra Species Count Period		3			4	2		1		

Table 4-1 Species found in fewer than 8 localities

Species	Locality and Number (* = Count Period)
Greater White-fronted Goose	Estevan (1)
Snow Goose	Regina (1)
Cackling Goose	Estevan (31), Gardiner Dam (33)
Gadwall	Coronach (1), Swift Current (3)
Blue-winged Teal	Qu'Appelle Dam (1)
Northern Pintail	Fort Qu'Appelle (1*), Gardiner Dam (1), Qu'Appelle Dam (1)
Green-winged Teal	Fort Walsh (1)
Redhead	Fort Qu'Appelle (2*), Gardiner Dam (2)
Ring-necked Duck	Estevan (1), Grayson (4), Qu'Appelle Dam (1)
Greater Scaup	Gardiner Dam (1)
Lesser Scaup	Crooked Lake (4), Estevan (8), Gardiner Dam (3)
Bufflehead	Estevan (2)
Hooded Merganser	Fort Qu'Appelle (1*)
Common Merganser	Gardiner Dam (210), Grayson (2), Qu'Appelle Dam (30), Squaw Rapids (4)
Red-breasted Merganser	Gardiner Dam (3)
Spruce Grouse	LaRonge South (1*), Somme (1*), Squaw Rapids (1), Turtle Lake (1)
Wild Turkey	Broadview (9), Kyle (3), Leader North (2)
Western Grebe	Qu'Appelle Dam (1)
Sharp-shinned Hawk	Estevan (1*), Saskatoon (1), Squaw Rapids (1), Swift Current (1*)
Cooper's Hawk	Round Lake (1), Saskatoon (1)
Red-tailed Hawk	Archerwill (1*), Bangor (1), Fort Walsh (1)
Rough-legged Hawk	Govenlock (1), Grasslands NP (1), Love-Torch River (1), Moose Mountain (1), Squaw Rapids (4)
American Kestrel	Estevan (1), Kyle (1), Saskatoon (1), Swift Current (1)
Gyrfalcon	Brightwater Res. (1), Codette Lake (1), Estevan (1), Morse (1*)
American Coot	Estevan (11), Fort Qu'Appelle (2)
Herring Gull	Gardiner Dam (5)
Eurasian Collared-Dove	Estevan (16), Kyle (3), Moose Jaw (30), Swift Current (25), Weyburn (4)
Northern Hawk Owl	Ketchen North (1), Love-Torch River (1), Squaw Rapids (7)
Great Gray Owl	Archerwill (1*), Armit (1), Candle Lake (1), Hudson Bay (1), Snowden (1), Somme (1*)
Boreal Owl	Hudson Bay (1*), Nipawin (1), Prince Albert (1)
Northern Saw-whet Owl	Gardiner Dam (1), Regina (1)
Belted Kingfisher	Fort Walsh (1), Grayson (1)
Black-backed Woodpecker	Candle Lake (1), Emma Lake (1), Fort Walsh (1), Kinistino (1), Nisbet Forest NW (1*), Prince Albert NP (1), Squaw Rapids (2)
American Crow	Bangor (1), Churchbridge (2), Craven (20), Moose Mountain (1), Regina (8), Saskatoon (8)
Ruby-crowned Kinglet	Gardiner Dam (1)
Townsend's Solitaire	Saskatoon (1), Swift Current (1)
Varied Thrush	Gardiner Dam (1), Grasslands NP (1), Hepburn (1*), Regina (1)
Brown Thrasher	Fort Qu'Appelle (1)
Cedar Waxwing	Saskatoon (2), Skull Creek (60), Turtleford (35*), Whitewood (30*)
Eastern Towhee	Regina (1)
American Tree Sparrow	Clark's Crossing (1), Eastend (1), Fort Walsh (92), Gardiner Dam (1), Kenaston (1), Pike Lake (17), Swift Current (3)
Song Sparrow	Fort Walsh (1), Prince Albert (2)
White-throated Sparrow	Birch Hills (1), Kinloch (1), Love-Torch River (1), Nipawin (2), Saskatoon (1*)

Table 4-2 Species found in fewer than 8 localities

Species	Locality and Number (* = Count Period)
Harris's Sparrow	Broadview (2), Fort Walsh (1), MacDowall (1), Morse (2), Skull Creek (15)
Lapland Longspur	Bromhead (168), Gardiner Dam (3), Kilwinning (30), Last Mountain Lake (1), Pike Lake (40), Spinney Hill (80), Weyburn (56)
Northern Cardinal	Regina (1)
Red-winged Blackbird	Ellisboro (3*), Fort Walsh (5)
Western Meadowlark	Brightwater Res. (1), Leader North (1), Nipawin (1)
Rusty Blackbird	Fort Qu'Appelle (1*), Fort Walsh (6), Pike Lake (4)
Brewer's Blackbird	Coronach (1), Endeavour (1*), Good Spirit Lake (11)
Common Grackle	Craven (2), Eastend (1), Saskatoon (1), Swift Current (1)
Brown-headed Cowbird	Regina (1)
Purple Finch	Archerwill (1*), Esterhazy (5*), Fort Qu'Appelle (2*), Luseland (3), Rouleau (1), Saltcoats (8), Yorkton (2)
Red Crossbill	Biggar (1), Cypress Hills PP (8), Saskatoon (4*)
White-winged Crossbill	Emma Lake (12)

Table 5 Birds not identified to species

Category	Locality and Number (* = Count Period)
Hawk sp.	Swift Current (1)
Woodpecker sp.	Armit (1), Brightwater Res. (1), Dundurn (1), Squaw Rapids (1)



Varied Thrush photographed in the Fargey's garden in Val Marie on 17 December 2005 and counted on the Grasslands National Park CBC by Chris Reed.

Table 6. New (in bold and italics), and tying, high counts for individual species - 2005. Count period results are in brackets.

LOCATION	2005 COUNT	SPECIES	PREVIOUS HIGH	LOCATION, YEAR
<i>Gardiner Dam</i>	33	<i>Cackling Goose</i>	1	<i>Gardiner Dam, 2004</i>
<i>Grayson</i>	4	<i>Ring-necked Duck</i>	2	<i>Estevan, 2001</i>
<i>Moose Jaw</i>	30	<i>Eurasian Collared-Dove</i>	18	<i>Moose Jaw, 2004</i>
<i>Squaw Rapids</i>	7	<i>Northern Hawk Owl</i>	4	<i>Crooked River, 1991; Armit, 1991; Nisbet Forest West, 2004</i>
Nipawin, Prince Albert, (Hudson Bay)	1	Boreal Owl	1	On previous counts south to Indian Head
Gardiner Dam, Regina	1	Northern Saw-whet Owl	1	On previous counts north to Maidstone Bridge
<i>Love-Torch River</i>	460	<i>Common Raven</i>	393	<i>Hudson Bay, 1994</i>
Gardiner Dam	1	Ruby-crowned Kinglet	1	Biggar, 1972
Ft. Qu'Appelle	1	Brown Thrasher	1	Saskatoon, 1960; Regina, 1968; Snowden, 1999
<i>Regina</i>	1	<i>Eastern Towhee</i>	New	
<i>Whitewood</i>	35	<i>American Goldfinch</i>	21	<i>Craven, 2002; Kenosee Lake, 2005</i>



Two of the Eurasian Collared-Doves seen on the Weyburn count, photographed on 17 December 2005 by Val JW Thomas of McTaggart, SK.

Table 7. Population changes in numbers of selected species in 2005* compared to 2004 and the average for 5 years (2000-2004), based on the number of birds per party hour. A minus sign indicates a decrease from previous years.

Species	% change from 2004	% change from 2000-2004	Species	% change from 2004	% change from 2000-2004
Canada Goose	44	52	Black-billed Magpie	0	-24
Mallard	-50	-25	American Crow	40	53
Common Goldeneye	10	-10	Common Raven	21	15
Gray Partridge	-38	-45	Horned Lark	63	42
Ring-necked Pheasant	17	-27	Black-capped Chickadee	-19	-30
Ruffed Grouse	16	-30	Boreal Chickadee	168	18
Sharp-tailed Grouse	30	-24	Red-breasted Nuthatch	-27	-54
Bald Eagle	51	8	White-breasted Nuthatch	-24	-35
Northern Goshawk	-43	-29	Brown Creeper	-40	0
Rough-legged Hawk	-62	-56	Golden-crowned Kinglet	3	34
Golden Eagle	-28	-23	American Robin	246	-88
Merlin	-48	-23	European Starling	107	17
Prairie Falcon	52	-1	Bohemian Waxwing	32	19
Rock Pigeon	34	9	Cedar Waxwing	-88	-87
Great Horned Owl	-6	18	American Tree Sparrow	85	66
Snowy Owl	13	7	Dark-eyed Junco	-61	-77
Great Gray Owl	-83	-88	Lapland Longspur	84	-65
Short-eared Owl	-76	-37	Snow Bunting	-40	-26
Downy Woodpecker	-20	-32	Pine Grosbeak	-92	-92
Hairy Woodpecker	-19	-28	Purple Finch	-84	-88
American 3-toed Woodpecker	97	4	House Finch	-17	2
Black-backed Woodpecker	-20	-47	White-winged Crossbill	-90	-96
Northern Flicker	-9	-32	Common Redpoll	-99	-99
Pileated Woodpecker	-38	-46	Hoary Redpoll	-100	-100
Northern Shrike	-56	-13	Pine Siskin	-82	-85
Gray Jay	11	-43	Evening Grosbeak	-36	-43
Blue Jay	-19	-27	House Sparrow	-14	-19

*As tremendous changes can occur in small sample sizes only those species recorded on an annual average of six or more counts are included.



“The cattle egret has been called the ‘white starling’ because of its explosive debut around the world. In the course of little more than a century, this wading bird has found its way to every continent except Antarctica.”

Scott Weidensaul, *The Birder’s Miscellany*, p.74.

ACTIVITIES OF JUNIOR BIRDWATCHERS IN SASKATCHEWAN, 1915 - 1974

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In an earlier article, I described the contributions of junior naturalists to the *Blue Jay* through its columns Nature Schoolhouse and Junior Naturalists, 1954 - 1972.⁹ In the decades prior to the 1950s, a few young people were actively engaged in nature-oriented groups, building bird houses and observing birds across Saskatchewan. The article focuses on some of their activities and accomplishments.

As early as 1917, the Saskatoon Boy Scouts, under the aegis of the Saskatoon Naturalists' Club (1915-1921), constructed 300 bird houses for use by the Saskatoon Parks Board. In 1922, the Collegiate Nature Club in Prince Albert elected 17-year-old Owen Cecil Furniss as its president.¹ In the late 1930s a group of boys, living on farms isolated from one another and calling themselves the Bird Circle, began circulating a "round-robin" letter. Each contributed bird migration dates and other notes twice a year. Members were Hartley Fredeen at Macrorie, Ralph Hedlin at Renown, Tom Harper at Simpson, and Horace Beach at Ernfold. The only surviving round-robin letter, their fourth, was mailed from Hartley on December 5, 1938. The Regina Natural History Society, which began in 1933, organized museum tours for children as early as 1934, and high school students Billy Whitehead and John Hunt gave talks to the society in 1945.¹⁰

The Yorkton Natural History Society began in the fall of 1942 with strong

junior involvement. Among its executive of seven, the secretary-treasurer, Stuart Houston, and two executive members, Harvey Beck and Vernon Barnes, were students in grades 9 (Barnes) or 10. The next year, Jim Smith, in grade 12, was elected to the executive to replace Harvey Beck. After each issue of the *Blue Jay* was mimeographed, students (on one occasion, Beck, Black, Houston, Smith, and Michael Priestly) gathered to fill in the title letters with blue crayon, and to collate and staple each eight-page copy. Stuart continued as secretary-treasurer until he left for the University of Manitoba in September 1945, the same time that Harvey Beck began classes at the University of Saskatchewan. Vernon Barnes continued on the executive until June 1946.

Isabel Priestly, founder of the *Blue Jay*, was a strong promoter of Junior Audubon Societies, of which 20 already existed across Saskatchewan when the Yorkton Natural History Society was formed. In the first issue of *Blue Jay*, she singled out the Bertwell Junior Audubon Society for special commendation.²

Blue Jay gave young people an opportunity to communicate with each other, to share their interests and information, and see their observations published. In the Oct.-Nov.-Dec. 1943 issue of *Blue Jay*, the student president (not the teacher!) at Mamornitz rural school near Buchanan submitted an interesting account of a Ruby-throated

Hummingbird nest found by Peter Bodiuk in Grade 3, and visited daily from the time the second egg was laid until the young fledged; the account was accompanied by excellent drawings.

For many, the opportunity for early involvement in nature-oriented activities led to interesting lifetime hobbies, and for others a lifelong career. I found it interesting and more than coincidental that the promise shown by the three leading contributors to the Junior Naturalists section in *Blue Jay*,⁹ was fulfilled in later life. Bohdan Pylypec did an honours B.Sc. in biology, followed by a Master's degree, writing a thesis on the Chestnut-collared Longspur at Matador under William J. Maher. After his third degree, a B.Ed., he taught at Humboldt for two years before Stan Rowe and Robert Coupland enticed him back to the Plant Ecology department, now Plant Sciences, at the University of Saskatchewan. Bohdan accompanied Stan Rowe on ecological surveys of the Athabasca sand dunes; he has been employed by the department ever since. One of his 2005 projects is a study of the birds on the University's Kernan Prairie property. Rosemary Nemeth graduated from the wildlife resources course at Kelsey Institute and became Saskatchewan's first female conservation officer. She trained fire control officers and was a driving force in establishing the conservation officers' museum north of Prince Albert prior to being killed in a car accident in 1995.⁷ Brian Irving, whose first *Blue Jay* subscription was a gift from his aunt, Sylvia Harrison (later Sylvia van Brien), farms southwest of Kelvington. Brian has continued his active membership in the Saskatchewan Natural History Society ever since, has twice served a three-year term (1991-1993 and 2000-2002)

as a member-at-large, and is steward of the nearby Van Brien Land Nature Sanctuary.

From the first, young people participated in Christmas Bird Counts (CBC). The first Yorkton CBC, December 29, 1941, was undertaken by three students, Stuart Houston, Vernon Barnes, and Neil Black, and one adult, C. J. Houston.² In 1942, five of the nine Yorkton CBC participants were students, the three mentioned above plus Michael Priestly and Jim Rogerson. That year, Rogerson also did a solo CBC at Saltcoats, as did Frank Roy at age 14 at Tullis. High school students Mary Black and Ray Adam joined the Yorkton count in 1943 and 1944, respectively.² During these years, after freeze-up but before the first major snowfall, juniors on ice skates counted all the muskrat houses along more than 20 miles of shoreline on Upper and Lower Rousay Lakes west of Yorkton. In 1945, Gus Yaki, a grade 8 student at Sandwith, began annual CBCs, and that year David Wright, a grade 9 student, joined his mentor, Maurice G. Street, for the Nipawin CBC. Lorne Scott, while in high school, took Indian Head's first CBCs alone in 1965 and 1966.²

During the late 1960s and early 1970s, bird nest boxes proliferated on fence lines across the prairie provinces, contributing to the eastward spread of the Mountain Bluebird and the westward spread of the Eastern Bluebird. Tree Swallow pairs on the Brandon Juniors bird box trail reached 2,505 by 1974, while Eastern Bluebird pairs increased from 34 in 1963 to 150 in 1973, and Mountain Bluebird pairs from 36 in 1963 to 825 in 1973.²

Saskatoon's Junior Natural History Society was formed in 1968 when Rod

and Michael Bantjes arrived from Yorkton at the same time as Ray Bisha from Brandon. All three boys had benefitted from the junior societies in those cities, and demanded that Saskatoon instigate a similar group—and build bluebird houses as Jack Lane had pioneered at Brandon. Lorne Scott, who at age fifteen in 1963 had begun building bird houses on his farm south of Indian Head, was mentor to the Saskatoon group, who joined their trail with his near Raymore on April 5, 1970, to form “the longest bluebird trail in the world” (*Blue Jay* 28:176). Saskatoon club reports on the increasing success along their bird box trail appeared in the *Blue Jay* in 1969, 1970, 1971 and 1974.

An appreciable number of juniors throughout Saskatchewan took part in activities in addition to the CBC and building bird boxes. Juniors constituted about one-third of the contributors to the Cooperative Spring Migration Study. Saskatchewan results of this continent-wide program were published in *Blue Jay*, 1959 through 1969, excepting 1964.² Students submitting individual reports were Spencer Sealy, Battleford; Paul Fowler, Carrot River; Rick Sanderson, Deschambault Lake; George Chopping, Dubuc; Harry Harder, Dundurn; Ross Lein, Estevan; Steve and Anton Waycheshen, High Hill and Kelvington; Jacob Jmaeff, Kamsack; Brian Irving and Dianne Sloan, Kelvington; Glen Fox, Kindersley; P. Woycichowsky, Kinistino; Donald Buckle, Lady Lake; Gary Anweiler, Melville; David Riome, Nipawin; Keith Harper, Pleasantdale; Don Karasiuk, Prince Albert; Wayne Harris, Raymore; Greg Bobbitt, Regina; Bill Horseman, Saltcoats; Stan Zazelenchuk, Stornoway; Darwin Mazur, Derwent Mazur, and Bohdan Pylypec, Yellow Creek.

The annual meeting of the American Ornithologists' Union (AOU) in Regina in 1959, the first such meeting in western Canada, was also a great stimulus for young people. Sponsoring organizations were the Saskatchewan Museum of Natural History, the Regina Natural History Society, the Saskatchewan Natural History Society, and Regina College of the University of Saskatchewan. The meeting set records for registration by non-AOU members, especially young people. Saskatchewan juniors who attended the AOU scientific sessions were Gary Anweiler of Melville, Glen Fox and Richard Fyfe of Kindersley, Bill Horseman of Saltcoats, Lawrence Ostoforoff of Kamsack, Spencer Sealy of Battleford and Frank Switzer of Rokeby.³ Influenced by their personal contacts at the meeting with leading experts such as Ernst Mayr, Fran Hamerstrom and Roger Tory Peterson, ornithology became either a professional career or a major life passion for each.

One spinoff of the AOU meeting preparations was the initiation of the Prairie Nest Records Scheme in 1958. This program, designed to “collect information on nesting birds in the three Prairie Provinces,”⁴ had substantial contributions from juniors: Spencer Sealy in Battleford and Glen Fox in Kindersley, but also Bill Anaka of Spirit Lake, Stanley Zazelenchuk of Stornoway, Jacob Jmaeff of Kamsack, Walter Chudzik of Canora, Ross Derkatch of Stornoway, Victor Schmidt of Melville, Larry Morgotch of Hyas, Maurice Maurer of Duff, and Ivan Yaholnitsky of Mikado.⁸ Another spinoff was that Glen Fox, age 16, studied nests of the Clay-colored Sparrow on the edge of Kindersley, the results of which were published in the *Auk*.⁶

Some of the above juniors made important contributions to the *Blue Jay*. Beginning in 1943, Frank Roy contributed nature notes from Tullis; his best sighting was the first nesting record of a Belted Kingfisher in the Elbow region of Saskatchewan. Glen Fox's nesting study of the Horned Lark⁵ won the first Cliff Shaw memorial award at the annual meeting of the Saskatchewan Natural History Society in 1959. Spencer Sealy began his lifelong contributions in 1960, together with Gary Anweiler in 1960 and Ross Lein in 1961.

It is difficult to be certain what effect youthful experiences have on people's activities later in life, except that the participants themselves continue to use terms such as "life-changing," "career-shaping," and "unique mentoring." Prior to his untimely death in 2002, Wayne Harris, compiler of CBC and Christmas Mammal Counts for many years and a *Blue Jay* editor, became an expert on every aspect of natural history and Regional Ecologist with the Department of the Environment. Lorne Scott is the only person to have been president of both the Saskatchewan Natural History Society and the Saskatchewan Wildlife Federation; he also served as Saskatchewan's Minister of the Environment, 1995-1999. Frank Switzer, retired from SaskPower, now is interviewed regularly on CBC radio about birds of interest. Richard Fyfe was made a member of the Order of Canada in 2000, in recognition of his lifetime of raptor research with the Canadian Wildlife Service. Glen Fox continues his research in wildlife toxicology with the Canadian Wildlife Service in an emeritus position as of 2005. Gary Anweiler has retired from work as an environmental consultant and is a leading lepidopterist in

Edmonton. Gus Yaki has recently retired from leading world-wide environmental tours. Spencer Sealy has had a prodigious output of scientific papers in ornithology, concentrating on seabirds and on cowbird parasitism, throughout his career with the Department of Zoology, University of Manitoba. Three Saskatchewan-raised Fellows of the AOU were prominent at the AOU annual meeting in Quebec City in 2004: Stuart Houston was presented with the Marion Jenkinson Award for 21 years as chair of the Memorials Committee, Ross Lein was serving his second term as Secretary of the AOU, and Spencer Sealy was named the new editor of *The Auk*. In 2005, Frank Roy, educator, conservationist and author of *Birds of the Elbow*, received an LL.D. from the University of Saskatchewan and was inducted into the Saskatchewan Order of Merit.

As one who has kept in touch with those mentioned above, it is my firm conviction that *Blue Jay* and provincial nature groups exerted a positive, formative effect on a number of its junior contributors, during those simpler, less complicated decades, the 1950s and 1960s.

Acknowledgments:

I thank Margaret Fredeen for the Hartley Fredeen Bird Circle correspondence.

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SUPERNORMAL FORSTER'S TERN CLUTCH AT DELTA MARSH, MANITOBA

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Figure 1. Six-egg Forster's Tern clutch in nest on 20 June 2005 at 22 Bay, Delta Marsh, Manitoba.
Justin Rasmussen

A clutch of eggs that exceeds the average number of eggs by at least 50% has been described as a 'supernormal clutch'.³ Supernormal

clutches have been reported in several orders of birds: Procellariiformes,^{7,14,22} Pelecaniformes,¹⁹ Charadriiformes,^{4,5,10,17,18} and

Galliformes.⁶ Although regularly reported for species of the family Laridae, supernormal clutches appear to be rare in Forster's Terns.³ For example, six-egg Forster's Tern clutches have been reported only twice: one of 15 nests examined by Rockwell¹⁵ and one of 291 museum egg sets examined by Conover.³ Here, we report a supernormal Forster's Tern clutch with six eggs at Delta Marsh, Manitoba.

As part of the Delta Marsh Water Bird Survey, we conducted a preliminary nest survey at 22 Bay (N 50°12'18", W 98°12'30"), Black Fox Lake (N 50°11'57", W 98°11'53"), and Simpson Bay (N 50°11'17", W 98°12'42") on 20 and 22 June 2005, and Riley Bay (N 50°13'12", W 98°09'08") on 17 and 19 June 2005. We examined five Forster's Tern colonies, comprising a total of 211 nests. All nests were located on "islands" of emergent cattail (*Typha* sp.) growing in shallow water. Nest cup structures were constructed of cattail and were located on floating rafts of dead, year-old plants.

Of the 211 clutches we examined, all but one contained 1 to 4 eggs. This unusual clutch at 22 Bay contained six eggs on 20 June 2005 (Figure 1). In addition to the six eggs in the nest, we found a semi-submerged Forster's Tern egg approximately 75 cm from the nest. Two days later, on 22 June, one of the six eggs was missing (Figure 2) and we found no signs of it, although the semi-submerged egg was still present. At Delta Marsh, the modal clutch size of Forster's Terns is three eggs (n = 77) with a range of one to four eggs recorded per clutch.¹¹ According to Conover's³ definition, a clutch size of five or more would be considered supernormal for Forster's Terns, as they typically lay two or three

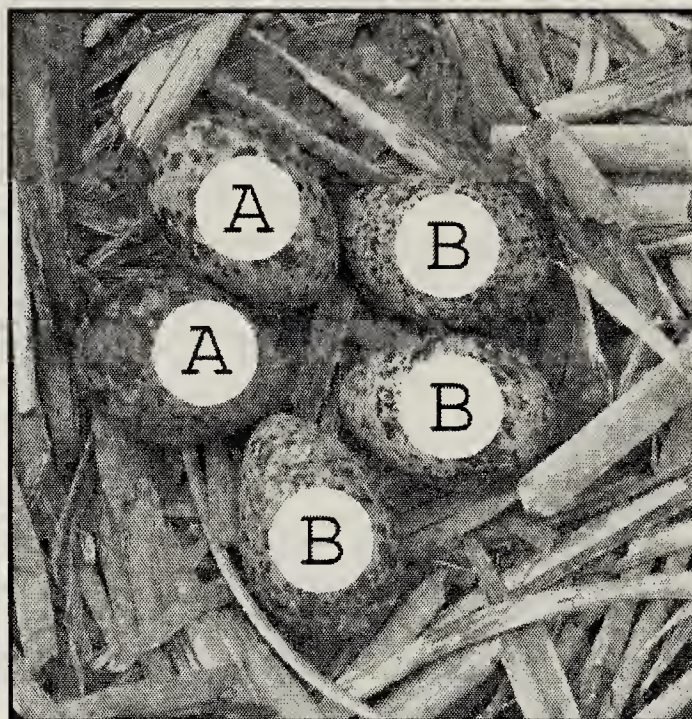


Figure 2. Six-egg Forster's Tern clutch reduced from 6 to 5 eggs, 22 June 2005, at 22 Bay, Delta Marsh, Manitoba. Todd Underwood

eggs.¹² Because we visited the colonies only twice, on June 20 and 22, we did not know whether clutches were complete. The "island" with the six-egg clutch was approximately 50 m x 20 m and contained 40 other Forster's Tern nests, as well as 9 Eared Grebe nests and 18 Western Grebe nests.

The size, stage of development (Table 1), ground color, and maculation patterns (Figures 1 and 2) of the eggs suggest that they were laid by 2 females. Similarities between certain eggs allowed us to identify two sets within the clutch: set A (eggs 1 and 2) and set B (eggs 3-5; Figure 2). To determine the stage of development, we used the egg flotation technique, first developed by Westerkov,²³ which has been validated for the Common Tern,⁹ a close relative of the Forster's Tern, and does not affect hatchability.¹ Eggs in set A floated, indicating that they were more developed. Eggs in set B were less developed and sank. The dimensions of eggs 1 and 2 were also similar to each other, as were the sizes

Table 1: Egg measurements for 5 of 6 eggs in a Forster's Tern clutch on 22 June 2005 when only 5 eggs remained.

Egg	Length (mm)	Width (mm)	Floated or Sank
1	41.7	31.1	Floated
2	41.4	31.3	Floated
3	43.3	29.8	Sank
4	43.7	29	Sank
5	42.7	29.7	Sank

of eggs 3, 4, and 5 (Table 1). These differences suggest the eggs were laid by two different females, however, confirmation of laying by two females would require genetic analyses.

Four hypotheses have been proposed to explain the origin of supernormal clutches: egg rolling, female-female pairing, brood parasitism and nest destruction. Supernormal clutch sizes in other larids, such as the Sooty Tern,² Caspian Tern,¹³ and Mew Gull,²¹ have resulted from rolling of nearby eggs into their nests. Female-female pairings, attributed to a DDT-induced feminization of male embryos in gulls,⁸ occur when two females lay in the same nest and this can result in supernormal clutch sizes. Brood parasitism, laying in another bird's nest to exploit the parental care of others, may produce supernormal clutches.²⁰ A female may also lay in another bird's nest because her own nest was destroyed the moment before laying.¹⁶ The circumstances that led to the formation of the six-egg clutch we observed are not known. We did not determine the fate of this supernormal clutch because we did not visit the colony after 22 June 2005.

Acknowledgments

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PLUMBEOUS VIREO SIGHT RECORD FOR SASKATCHEWAN IN 2004

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On 18 May 2004, the authors observed a bird fitting the description of a spring-plumaged Plumbeous Vireo at Val Marie, Saskatchewan. We watched the bird for over 25 minutes, starting at 0830h, in good light, using 10X binoculars and a variable power spotting scope (15-45X) from distances of 8-30 m, enabling us to check field marks several times and

from different angles. We made field notes and used the Sibley Guide to Birds⁹ as a direct reference during our observations. The sky was clear, the wind calm, and the temperature 12°C.

The bird was foraging in hybrid poplars approximately 15-20 m tall in a farmstead shelterbelt on the northeast corner of Val Marie, adjacent

to the Frenchman River along Highway 18. The bird kept between 4 and 10 m from the ground, feeding among the mostly-leafless inner branches in early leaf-out stage, often near the trunk and only occasionally out to the branch tips. It did not feed in the top 3 m of the canopy. It moved about quietly and slowly, often perching on branches and did not move its tail (flick, bob or wag), in contrast to the rather nervous Yellow-rumped Warblers also present. The vireo would fly short distances, a few meters, to another tree where it continued feeding. We did not see or hear it vocalize.

The first field marks we saw were the conspicuous 'white spectacles,' general grey colouration and relatively short, dark bill, all suggesting one of the Solitary Vireo complex which includes the Plumbeous, Cassin's and Blue-headed Vireos. Both wing bars were evident, but thin, making the upper one somewhat less obvious. Closer investigation allowed us to see the even grey of the upper parts of the bird and confirm that there was no contrast between the head and back colour. The same grey colouration extended down the side of the head over the auriculars, and the lores were grey, contrasting with the white supraloral area. The throat was whitish, particularly when seen from below, but the contrast with the side of the head did not appear to be as sharply delineated as in a typical Blue-headed Vireo. The breast, belly, flanks and undertail coverts were whitish except for a small patch at the sides of the breast at the bend of the wing which was a dull, smudgy grey with no hint of yellow or buff. The outer edges of the flight feathers on the wings and tail were white and showed none of the buff or yellow colour expected on a Blue-headed or Cassin's Vireo. The tip of the primaries on the folded wing

reached slightly past the tip of the undertail coverts. The eye was dark, and both the bill and legs were grey-black. These field marks agreed with the illustration in the Sibley field guide of a spring Plumbeous Vireo in worn adult plumage (page 348). We did not see the bird raise its tail as described by Sibley.⁹

In 1997, the American Ornithologists' Union officially divided the Solitary Vireo (*Vireo solitarius*) into three full species: Blue-headed Vireo (*V. solitarius*), Cassin's Vireo (*V. cassinii*) and Plumbeous Vireo (*V. plumbeus*). This split was based on molecular genetic studies that revealed significant divergence in mitochondrial DNA and allozymes within the Solitary Vireo complex. While the species have been illustrated separately in some field guides for some time, even before 1997, identification of many individuals is difficult and requires caution.

Godfrey, in 1986, had no record of the Solitary (Plumbeous) Vireo (*Vireo solitarius plumbeus*) occurring in Canada either as a breeding subspecies or vagrant, however, since then several sightings have been reported for eastern Canada, all outside the breeding season: two fall records for Nova Scotia^{2,5,11} and two spring migration records for southern Ontario (M. Gosselin, Collection Manager, Canadian Museum of Nature, pers. comm., 8 Dec. 2005; M. Peck, Ornithology Technician, Royal Ontario Museum, pers. comm., 9 Dec. 2005).

There are no accepted Plumbeous Vireo records for the three prairie provinces (J. Hudon, Curator of Ornithology, Royal Alberta Museum, pers. comm., 8 Dec. 2005; R. Mooi, Curator of Zoology, Manitoba Museum

of Man and Nature, pers. comm., 13 Dec. 2005; G. Sutter, Curator of Ornithology, Royal Saskatchewan Museum, pers. comm., 8 Dec. 2005). Part of the problem is that some records occurred prior to 1997 and the documentation is insufficient to assign the report to one of the three new vireo species. Chris Escott saw a Solitary Vireo singing on 13 June 1981 in the East Block of the Cypress Hills but no further details are given.^{4,10} Jim McKay observed a vireo which he knew was not a Blue-headed in the Centre Block of the Cypress Hills in early July 1999 at close range and in good light. He first thought the bird was a Plumbeous Vireo. Later when told there was no record of that species for Saskatchewan he decided he could not exclude the possibility that it might be a Cassin's Vireo (16 October 2003 letter from Jim McKay to Stuart Houston). A report of a "Solitary Vireo of the Rocky Mountain race" from the Inglewood Bird Sanctuary in Calgary on 16 August 1993⁶ is intriguing but inconclusive.

Without evidence of Plumbeous Vireos breeding in Saskatchewan we suggest that the vireo seen in 2004 was a spring transient that overflowed its normal breeding range in the United States. This record is nearly 400km north of the nearest known breeding range of the species in the mountains of southern Montana; this species also breeds in the Black Hills of South Dakota and Wyoming and in the mountains of extreme southern Idaho.^{2, 5}

The Cypress Hills could potentially support breeding populations of either Plumbeous or Cassin's vireos. Plumbeous Vireos typically breed in warm, dry, open structured mountain forests containing pine trees sometimes mixed with juniper

(*Juniperus sp.*), oak and aspen but do occur in riparian woodlands of cottonwoods, Manitoba Maple (*Acer negundo*) and willows. Cassin's Vireos typically breed in various cooler, wetter habitats including mixed riparian woodlands.^{2, 5} The nearest known breeding location for Cassin's Vireo is the southern Rocky Mountains of western Alberta where the birds often use spruce and pine stands intermixed with deciduous trees and shrubbery.⁸ During migration, the habitat used is more varied, including riparian areas and any tall vegetation.² Heindel also states that in spring, Plumbeous Vireos migrate slightly later than Cassin's Vireos, perhaps because their breeding habitat in the interior Rockies is less hospitable early in the season than areas more to the west used by the Cassin's.⁵ Salt indicates that male Solitary (Blue-headed) Vireos arrive in central Alberta in mid-May and females later in the month.⁷

Since the Plumbeous Vireo was given full species status by the AOU in 1997, we now need detailed records to help clarify the status of Blue-headed, Plumbeous and Cassin's vireos in southern Saskatchewan. Spring or summer observations of any of these three species of vireos in southern Saskatchewan would be welcomed by the senior author, especially if they pertain to birds suspected of breeding.

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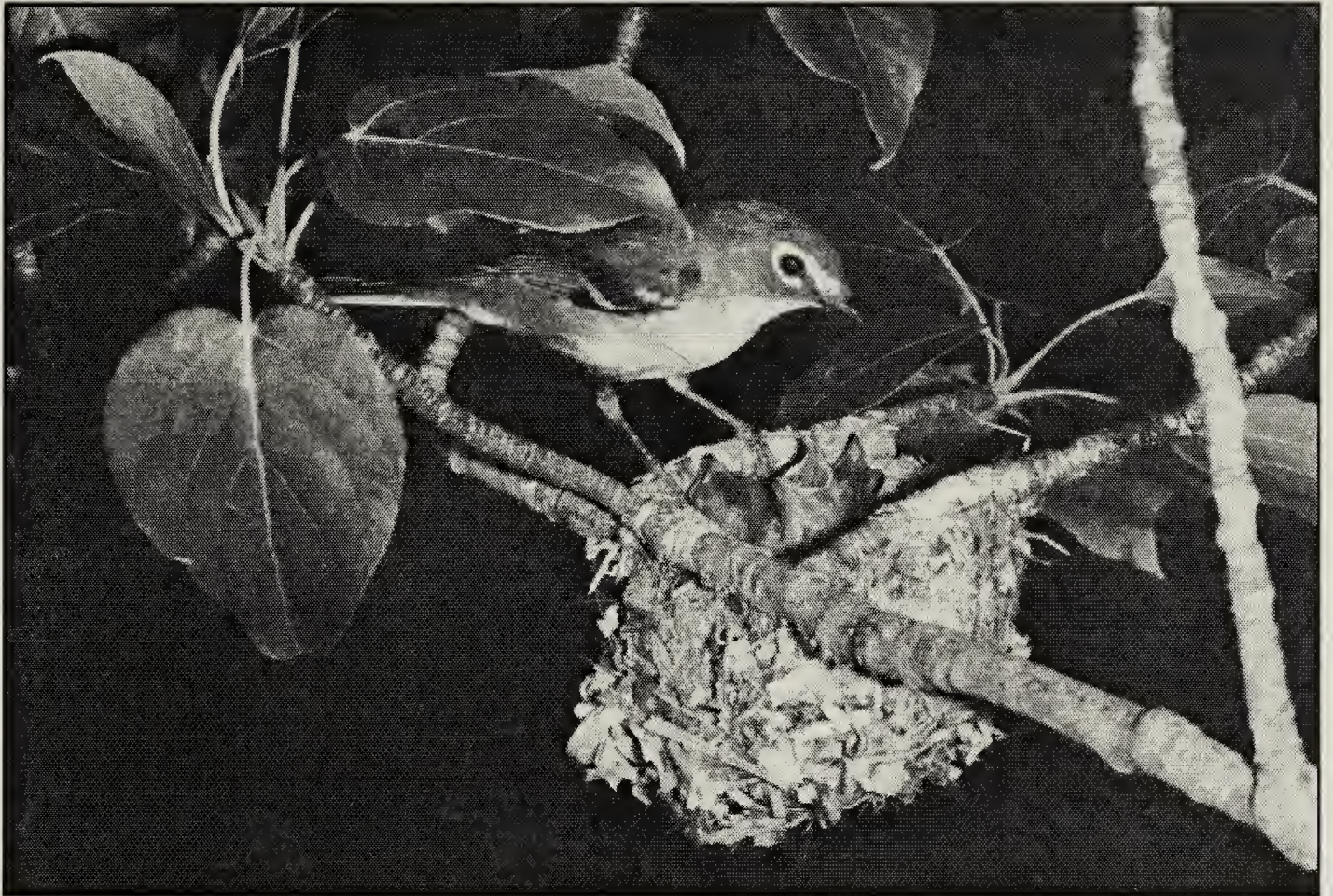
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Blue-headed Vireo

R. E. Gehlert



“In the winter woods, much is buried and hidden, but more is revealed....Two feet of fresh powder has already fallen on solidly frozen ground layered with fallen leaves. Recently, those leaves obscured the views through an otherwise opaque forest of green. Now, at the end of January, I could see *through* the forest from one large maple tree to another, to beech trees, tip-ups, and beyond to an open bog bordered with viburnum thickets. I was looking for bird nests that had in the summer been almost impossible to see because they were then enveloped in leaves. They would now show up as dark silhouettes with white caps.”

Bernd Heinrich, *Winter World*, p. 62.

MAMMALS

33RD ANNUAL SASKATCHEWAN CHRISTMAS MAMMAL COUNT-2005.

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Ninety-two of the 98 compilers submitting Christmas Bird Counts (CBC) also sent in mammal counts. The 34 species of mammals seen or heard on count day was second only to the 35 seen or heard in 2003, while the 4360 individuals is the most since overall totals were first tabulated in 2002.

As usual, the most abundant mammal was the White-tailed Deer, followed by the Mule Deer. For the first time in at least four years, the Pronghorn outnumbered the American Red Squirrel and took third place. The most frequently-seen mammals have involved the same four species since 2002. This year, White-tailed Deer were noted on 70% of all counts, American Red Squirrels on 59%, Coyotes on 58%, and Mule Deer on only 30%.

Estuary had the most species seen in a day at 10, (followed by Skull Creek and Swift Current, each with 9) while Fort Walsh had the most individuals with 431. Although all-time high counts for each species have yet to be tabulated, some of this year's counts must be contenders. These include 37 Eastern Grey Squirrels from Swift Current, 71 Meadow Voles from Somme, and 9 moose from Kindersley North.

No new species were recorded, but the Bison due to be released into the wild in Grasslands National Park may qualify next year. Rarities included a Swift Fox seen on the Govenlock count and tracks of Mountain Lion noted in the Cypress Hills on both the Fort Walsh and

Cypress Hills Provincial Park counts.

For information on participants, weather, coverage and location of Christmas Mammal Counts, see the CBC summary in this issue.

The number of mammals actually seen or heard on count day is treated separately from those recorded by other means, or those recorded during count period (14 December to 5 January) but not on count day. Numbers of individuals seen or heard are given in Table 1 and are tallied in the first line of totals at the bottom of the table. The number of species they represent is given in the second line.

For animals detected by tracks, by other means, or that are seen or heard in the count period but not on count day, we tabulate only the species *additional* to those actually seen or heard on count day with no number of individuals given. Species detected only by tracks are indicated by 't' in the table; those detected only by other means (dead animals or clearly identifiable chewing, digging, dens or lodges) by 'o.' Species detected by any means during the count period, but not on count day, are indicated by 'c' in the table. These additional species are tallied in lines 3, 4 and 5 at the bottom of the table. If a mammal is reported only as a member of a species group (i.e. mouse species, deer species), it is counted as a species only if no other species in this group has been definitely recorded. The columns at the end of the table give totals for each species.

Table 1. 33rd Saskatchewan Christmas Mammal Count-2005.

Map number	1	2	3	5	6	7	8	9	10	11	12	13	14	15
	Archerwill, 19 Dec 2005	Armit, 4 Jan 2006	Bangor, 27 Dec 2005	Biggar, 27 Dec 2005	Birch Hills, 19 Dec 2005	Brightwater, 23 Dec 2005	Broadview, 22 Dec 2005	Bromhead, 4 Jan 2006	Cabri, 24 Dec 2005	Candle Lake, 29 Dec 2005	Christopher Lake, 15 Dec 2005	Churchbridge, 4 Jan 2006	Clark's Crossing, 17 Dec 2005	Codette Lake, 31 Dec 2005
Shrew Species					t		t			t				
Eastern Cottontail														
Nuttall's Cottontail												t		
Snowshoe Hare	t	t		t	t		t			t	1	3		1
White-tailed Jack Rabbit	4			t				t				t	2	
Richardson's Ground Squirrel							t							
Black-tailed Prairie Dog														
Eastern Grey Squirrel							5					1		
Fox Squirrel							4							
American Red Squirrel	1	1	1		2		4			20	2	5	1	10
Northern Flying-Squirrel	c													
Northern Pocket Gopher														
American Beaver					o		o			o		o		1
Deer Mouse													t	
Muskrat														
Gapper's Red-Backed Vole														
Meadow Vole												2		
Vole Species					t			t		t				1
Mouse Species						t	t					t		
Norway Rat												t		
House Mouse														
American Porcupine	t				t		1					o		t
Coyote	t	t	1	4	1	3	1	5		t		3	7	t
Wolf	t	2	1							t				
Red Fox	1							1		t	1		2	
Swift Fox														
Raccoon	2						t							
American Marten														
Fisher										t				
Ermine					t		t			t		t		t
Long-tailed Weasel		t			t		t			t				t
Least Weasel					t									t
Weasel Species	c			t				t						
American Mink					t									
American Badger														
Striped Skunk	c													
River Otter										t				
Mountain Lion														
Bobcat												t		
Lynx										t				t
Woodland Caribou														
Mule Deer	c			7										
White-tailed Deer	4	11	28	3			t	10		9	t	7	22	57
Deer Species					5	t								
Moose	1	5		t			t	2				t		
Eik	40													t
Pronghorn									40					
Totals seen/heard on count day	53	19	31	14	8	3	15	18	40	29	4	21	34	70
Total species seen/heard	7	4	4	3	3	1	5	4	1	2	3	6	5	5
Total species recorded by tracks	4	3	0	4	8	2	9	3	0	11	1	6	1	7
Total species otherwise recorded	0	0	0	0	1	0	1	0	0	1	0	2	0	0
Species recorded count period	4	0	0	0	0	0	0	0	0	0	0	0	0	0
Total species count period and day	15	7	4	7	12	3	15	7	1	14	4	14	6	12

Table 1. 33rd Saskatchewan Christmas Mammal Count-2005.

Map number	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	Coronach, 29 Dec 2005	Craven, 17 Dec 2005	Crooked Lake, 3 Jan 2006	Crooked River, 31 Dec 2005	Cypress Hills P.P., 30 Dec 2005	Dorintosh, 29 Dec 2005	Duck Lake, 19 Dec 2005	Dundurn, 2 Jan 2006	Eastend, 2 Jan 2006	Ellisboro, 27 Dec 2005	Emma Lake, 27 Dec 2005	Endeavour	Esterhazy-Hazelcliff, 2 Jan 2006	Estevan, 24 Dec 2005
Shrew Species														
Eastern Cottontail														t
Nuttall's Cottontail					3				4					
Snowshoe Hare		t	t				t	t		t		t		
White-tailed Jack Rabbit		t						t	t					
Richardson's Ground Squirrel														
Black-tailed Prairie Dog														
Eastern Grey Squirrel														
Fox Squirrel														2
American Red Squirrel		1	4	3	11	2	3			4	12	c	1	
Northern Flying-Squirrel											1			
Northern Pocket Gopher														
American Beaver			o			o								
Deer Mouse							t		t					
Muskrat			1			o								o
Gapper's Red-Backed Vole														
Meadow Vole														
Vole Species														
Mouse Species		t		c		t		t				t		
Norway Rat														
House Mouse														
American Porcupine													t	2
Coyote		5	2		2	t	t	t	7	2			t	4
Wolf														
Red Fox		t			2								t	
Swift Fox														
Raccoon														
American Marten														
Fisher						t								
Ermine														
Long-tailed Weasel														
Least Weasel					1								c	
Weasel Species														
American Mink														
American Badger	o													
Striped Skunk														
River Otter						t								
Mountain Lion					t									
Bobcat														
Lynx														
Woodland Caribou														
Mule Deer		16			3			11	113					6
White-tailed Deer	9	50		c	28	t	3	4	1	1	1	8	6	15
Deer Species			t											
Moose									7			c		
Elk														
Pronghorn														
Totals seen/heard on count day	9	72	7	3	50	2	6	15	132	7	14	8	7	29
Total species seen/heard	1	4	3	1	7	1	2	2	5	3	3	1	2	5
Total species recorded by tracks	0	4	2	0	1	5	3	4	2	1	0	5	0	1
Total species otherwise recorded	1	0	1	0	0	2	0	0	0	0	0	0	0	1
Species recorded count period	0	0	0	2	0	0	0	0	0	0	0	3	0	0
Total species count period and day	2	8	6	3	8	8	5	6	7	4	3	9	2	7

Table 1. 33rd Saskatchewan Christmas Mammal Count-2005.

Map number	30	31	32	33	34	35	36	37	39	42	43	44	45	46
	Estuary North, 5 Jan 2006	Fenton, 17 Dec 2005	Fort Qu'Appelle, 17 Dec 2005	Fort Walsh, 17 Dec 2005	Gardiner Dam, 19 Dec 2005	Good Spirit Lake, 31 Dec 2005	Govenlock, 18 Dec 2005	Grasslands, N.P., 5 Jan 2006	Harris, 2 Jan 2006	Kelvington, 30 Dec 2005	Kenaston, 26 Dec 2005	Kenosee Lake, 30 Dec 2005	Ketchen, 26 Dec 2005	Kilwinning, 19 Dec 2005
Shrew Species						t								
Eastern Cottontail														
Nuttall's Cottontail	1			11	6		4				t			
Snowshoe Hare		t			t	t			t	t		t	t	
White-tailed Jack Rabbit	4	t		t	6	t	1		t		t			t
Richardson's Ground Squirrel														
Black-tailed Prairie Dog								54						
Eastern Grey Squirrel			c											
Fox Squirrel														
American Red Squirrel		2	6	22		2				t		3	c	5
Northern Flying-Squirrel														
Northern Pocket Gopher														
American Beaver						o					o	o		
Deer Mouse			c								t			
Muskrat			1			o					o			
Gapper's Red-Backed Vole														
Meadow Vole			c	2	1									
Vole Species						t	t		t					
Mouse Species		t								t				
Norway Rat														
House Mouse			3											
American Porcupine	1	t		4		t	1			t				
Coyote	11	5	1	16	8	1	4	2	10	t	1			
Wolf														
Red Fox	1	2	c			t	t		t	c	t		1	1
Swift Fox							1							
Raccoon										c	t			
American Marten														
Fisher														
Ermine		t		t	1									
Long-tailed Weasel	1		c								t			
Least Weasel														
Weasel Species						t				t				
American Mink			1			t								
American Badger							o							
Striped Skunk											o			1
River Otter														
Mountain Lion				t										
Bobcat														
Lynx														
Woodland Caribou														
Mule Deer	38		c	170	201		81	44	174		8			
White-tailed Deer	53		1	204	51	16	18	63	5	t	12	3	t	12
Deer Species		t												
Moose	2					c				c	t		t	
Elk				2		3							t	
Pronghorn	15						183							
Totals seen/heard on count day	127	9	13	431	274	22	293	163	189	0	21	6	1	19
Total species seen/heard	10	3	6	8	7	4	8	4	3	0	3	2	1	4
Total species recorded by tracks	0	6	0	3	1	8	2	0	4	7	7	1	4	1
Total species otherwise recorded	0	0	0	0	0	2	1	0	0	0	3	1	0	0
Species recorded count period	0	0	6	0	0	1	0	0	0	3	0	0	1	0
Total species count period and day	10	9	12	11	8	15	11	4	7	10	13	4	6	5

Table 1. 33rd Saskatchewan Christmas Mammal Count-2005.

Map number	47	48	49	50	51	52	53	54	55	56	57	58	59	60
	Kindersley North, 26 Dec 2005	Kinistino (Horsehoe Bend), 3 Jan 2006	Kinloch, 19 Dec 2005	Kutawagan Lake, 26 Dec 2005	Kyle, 2 Jan 2006	La Ronge North, 2 Jan 2006	La Ronge South, 28 Dec 2005	Last Mountain Lake, 27 Dec 2005	Leader North, 31 Dec 2005	Love-Torch River, 29 Dec 2005	Luseland, 1 Jan 2006	MacDowall, 29 Dec 2005	MacNutt	Matador, 28 Dec 2005
Shrew Species								c						
Eastern Cottontail														
Nuttall's Cottontail					1				3					1
Snowshoe Hare			t				1	c		t		t		
White-tailed Jack Rabbit	1			1	1			1	2	1	1			
Richardson's Ground Squirrel														c
Black-tailed Prairie Dog														
Eastern Grey Squirrel														
Fox Squirrel														
American Red Squirrel		2	1			3	6	1		10		4	2	
Northern Flying-Squirrel														
Northern Pocket Gopher														
American Beaver			o					o				o		
Deer Mouse				t							2			
Muskrat			o					o				o		
Gapper's Red-Backed Vole														
Meadow Vole														
Vole Species			t					1				1		1
Mouse Species					t				2			1		
Norway Rat														
House Mouse														
American Porcupine					t			1		t		t		
Coyote	1	t	t	4	1	1	t	t	5	t	1	2		4
Wolf								t						
Red Fox		1						t				t		
Swift Fox														
Raccoon														
American Marten														
Fisher													o	
Ermine								c						
Long-tailed Weasel										1		1		
Least Weasel														
Weasel Species			t											
American Mink			t											
American Badger	o			o							1	o		
Striped Skunk														
River Otter								1						
Mountain Lion														
Bobcat														
Lynx												t	1	
Woodland Caribou								t						
Mule Deer	6				5			c	1		5	2		14
White-tailed Deer		o	67	3	14			4	3	27	c	5	11	5
Deer Species														
Moose	9		1					t		c	c			
Elk		t	12							1				53
Pronghorn	7				36									
Totals seen/heard on count day	24	3	81	8	58	4	8	8	16	40	10	16	14	78
Total species seen/heard	5	2	4	3	6	2	3	5	6	5	5	7	3	6
Total species recorded by tracks	0	2	5	1	2	0	5	1	0	4	0	4	0	0
Total species otherwise recorded	1	1	2	1	0	0	2	0	0	0	0	3	1	0
Species recorded count period	0	0	0	0	0	0	0	4	0	1	2	0	0	1
Total species count period and day	6	5	11	5	8	2	10	10	6	10	7	14	4	7

Table 1. 33rd Saskatchewan Christmas Mammal Count-2005.

Map number	61	62	63	64	65	66	67	68	70	71	72	73	74	75
	Mayview, 5 Jan 2006	Meadow Lake, 26 Dec 2005	Moose Jaw, 26 Dec 2005	Moose Mountain, 21 Dec 2005	Morse, 17 Dec 2005	Nipawin, 30 Dec 2005	Nisbet Forest NW, 23 Dec 2005	Nisbet Forest West, 1 Jan 2006	Pike Lake, 2 Jan 2006	Prince Albert, 18 Dec 2005	Prince Albert N.P., 15 Dec 2005	Qu'Appelle Dam, 18 Dec 2005	Raymore, 2 Jan 2006	Regina, 26 Dec 2005
Shrew Species														
Eastern Cottontail														
Nuttall's Cottontail			1		t							3		
Snowshoe Hare			1			12	t		t	t				t
White-tailed Jack Rabbit				t	t				t	t				12
Richardson's Ground Squirrel							c							
Black-tailed Prairie Dog														
Eastern Grey Squirrel														13
Fox Squirrel			2											3
American Red Squirrel	2	4		3		3		6	8	14	2			
Northern Flying-Squirrel														
Northern Pocket Gopher					o									
American Beaver										o				
Deer Mouse										t		1		
Muskrat					o						o			o
Gapper's Red-Backed Vole														
Meadow Vole										t				t
Vole Species											t			
Mouse Species				t			t		t					
Norway Rat														
House Mouse														
American Porcupine							o	1						t
Coyote		1	4	2	21	1	8	c		5	t	13	t	5
Wolf											t			
Red Fox			1			1	c				1			
Swift Fox														
Raccoon														
American Marten											t			
Fisher											t			
Ermine											t			
Long-tailed Weasel						1								
Least Weasel									t					t
Weasel Species														
American Mink														t
American Badger														
Striped Skunk									o					
River Otter											5			
Mountain Lion														
Bobcat														
Lynx														
Woodland Caribou														
Mule Deer			8		24	c						58		
White-tailed Deer		4	5	t	81		t	c	23	t	24	47	t	3
Deer Species									2					
Moose		o				c								
Elk						t					68			
Pronghorn												3		
Totals seen/heard on count day	2	9	22	5	126	18	8	7	33	19	100	125	0	36
Total species seen/heard	1	3	7	2	3	5	1	2	2	2	5	6	0	5
Total species recorded by tracks	0	0	0	3	2	1	3	0	4	5	6	0	2	5
Total species otherwise recorded	0	1	0	0	2	0	1	0	1	1	1	0	0	1
Species recorded count period	0	0	0	0	0	2	2	2	0	0	0	0	0	0
Total species count period and day	1	4	7	5	7	8	7	4	7	8	12	6	2	11

Table 1. 33rd Saskatchewan Christmas Mammal Count-2005.

Map number	76	77	78	79	80	81	82	83	84	85	86	87	88	89
	Rouleau, 1 Jan 2006	Round Lake, 27 Dec 2005	Saltcoats, 4 Jan 2006	Sk. Landing P.P., 20 Dec 2005	Sk. River Forks, 28 Dec 2005	Saskatoon, 26 Dec 2005	Sawyer Lake, 31 Dec 2005	Shamrock, 17 Dec 2005	Skull Creek, 28 Dec 2005.	Snowden, 30 Dec 2005	Somme, 21 Dec 2005	Spalding, 27 Dec 2005	Spinney Hill, 16 Dec 2005	Squaw Rapids, 5 Jan 2006
Shrew Species														
Eastern Cottontail														
Nuttall's Cottontail				3					6					
Snowshoe Hare		1	3		t			t		t	c			t
White-tailed Jack Rabbit				1		t		t	5		2	t	1	
Richardson's Ground Squirrel														
Black-tailed Prairie Dog														
Eastern Grey Squirrel														
Fox Squirrel														
American Red Squirrel		3	5		11	7			2	9	5	1		13
Northern Flying-Squirrel														
Northern Pocket Gopher									o					
American Beaver		c												o
Deer Mouse											c			
Muskrat														o
Gapper's Red-Backed Vole														
Meadow Vole										t	71			
Vole Species					t	2								t
Mouse Species				t								o		
Norway Rat														
House Mouse												o		
American Porcupine		1		1	1						1	t	1	
Coyote		2		4	3	4		3	5		c		1	1
Wolf					t						c			t
Red Fox		t	2					1	2			t		t
Swift Fox														
Raccoon									t					
American Marten														
Fisher					t									
Ermine									2		c			t
Long-tailed Weasel			1		t	3					c			
Least Weasel														
Weasel Species										t		t		
American Mink	t													
American Badger			o			1		o	o					
Striped Skunk			o			o								
River Otter														t
Mountain Lion														
Bobcat														
Lynx					t									
Woodland Caribou														
Mule Deer				8		18		29	120		c			
White-tailed Deer		2	6	4		91	7	38	200	6	147	t	7	16
Deer Species					t									
Moose					1				2					
Elk					t						20			t
Pronghorn	12			79										
Totals seen/heard on count day	12	9	17	100	16	126	7	71	344	15	246	1	10	30
Total species seen/heard	1	5	5	7	4	7	1	4	9	2	6	1	4	3
Total species recorded by tracks	1	1	0	1	8	1	0	2	1	3	0	5	0	7
Total species otherwise recorded	0	0	2	0	0	1	0	1	2	0	0	2	0	2
Species recorded count period	0	1	0	0	0	0	0	0	0	0	7	0	0	0
Total species count period and day	2	7	7	8	12	9	1	7	12	5	13	8	4	12

Table 1. 33rd Saskatchewan Christmas Mammal Count-2005.

Map number	90	91	92	94	95	96	97	98						
	Stenen, 2 Jan 2006	Swift Current, 31 Dec 2005	Togo, 3 Jan 2006	Turtleford, 29 Dec 2005	Weyburn, 15 Dec 2005	White Bear, 27 Dec 2005	Whitewood, 1 Jan 2006	Yorkton, 19 Dec 2005	# individuals seen/heard count day	# Counts seen/heard	# Counts recorded as tracks	# Counts recorded as other	# Counts, count period	# Counts, count period & count day
Shrew Species				1					1	1	4	0	1	6
Eastern Cottontail									0	0	1	0	0	1
Nuttall's Cottontail		11							58	14	3	0	0	17
Snowshoe Hare			2	1			2	t	28	11	31	0	2	44
White-tailed Jack Rabbit		2			t	2		t	50	19	21	0	0	40
Richardson's Ground Squirrel		c		o					0	0	1	1	3	5
Black-tailed Prairie Dog									54	1	0	0	0	1
Eastern Grey Squirrel		37					c		56	4	0	0	2	6
Fox Squirrel					1		1		13	6	0	0	0	6
American Red Squirrel	6		7	5			6		279	54	1	0	2	57
Northern Flying-Squirrel			2						3	2	0	0	1	3
Northern Pocket Gopher				o						0	0	3	0	3
American Beaver				o			o		1	1	0	16	1	18
Deer Mouse				t					3	2	7	0	2	11
Muskrat				o				o	2	2	0	13	0	15
Gapper's Red-Backed Vole				3					3	1	0	0	0	1
Meadow Vole							t		76	4	4	0	1	9
Vole Species					t			t	6	5	12	0	0	17
Mouse Species		t							3	2	15	1	1	19
Norway Rat									0	0	1	0	0	1
House Mouse									3	1	0	1	0	2
American Porcupine			2				2	t	20	14	13	2	0	29
Coyote		4	1	2			4		219	53	16	0	2	71
Wolf									3	2	6	0	1	9
Red Fox	1				t		t		22	17	15	0	3	35
Swift Fox									1	1	0	0	0	1
Raccoon		1							3	2	3	0	1	6
American Marten									0	0	1	0	0	1
Fisher									0	0	4	1	0	5
Ermine									3	2	9	0	2	13
Long-tailed Weasel		1		1					10	8	7	0	2	17
Least Weasel			1						2	2	4	0	1	7
Weasel Species								t	0	0	8	0	1	9
American Mink		1					1		3	3	5	0	0	8
American Badger							o		2	2	0	9	0	11
Striped Skunk				o			c		1	1	0	5	2	8
River Otter									6	2	3	0	0	5
Mountain Lion									0	0	2	0	0	2
Bobcat									0	0	1	0	0	1
Lynx									1	1	4	0	0	5
Woodland Caribou									0	0	1	0	0	1
Mule Deer		21		o		7			1198	28	0	1	5	34
White-tailed Deer	7	29	6		3		3	3	1616	64	10	1	3	78
Deer Species									7	2	4	0	0	6
Moose							c		30	9	6	1	7	23
Elk									199	8	6	0	0	14
Pronghorn									375	8	0	0	0	8
Totals seen/heard on count day	14	107	21	13	4	9	19	3	4360					
Total species seen/heard	3	9	7	6	2	2	7	1		34				
Total species recorded by tracks	0	1	0	1	3	0	2	5			29			
Total species otherwise recorded	0	0	0	6	0	0	2	1				13		
Species recorded count period	0	1	0	0	0	0	3	0					20	
Total species count period and day	3	11	7	13	5	2	14	7						43

REPTILES AND AMPHIBIANS

CALLING PERIODS FOR FROGS AND TOADS NEAR PINAWA, MANITOBA, WITH AN UPDATE ON MINK FROG AND GREEN FROG DISTRIBUTION

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The spring frog chorus in the moist forests of southeastern Manitoba is a big event in the wildlife calendar, a reassuring sign that the cycle of nature continues to turn, even if it may hamper some birders' efforts to listen for owls! After the long silence of winter, it is astonishing to hear the woods come alive with an early Wood Frog chorus, followed a few weeks later by the ear-splitting calls of uncountable Spring Peepers. But all is not well for amphibians, and there is concern about declines of many species worldwide.^{2,4} One response to these declines has been the development of amphibian calling surveys in North America, starting in Wisconsin in 1981.^{3,6} The gatherings of calling male frogs and toads at breeding locations provide a convenient means of identifying the species present and tracking their numbers and distribution from year to year.

While most Manitoba amphibians seem secure in their abundance, there has been concern about Northern Leopard Frog populations throughout western North America.^{9,13,16} During the mid-1970s, populations of this species "crashed" in Manitoba, "greatly declined" in Saskatchewan, and "almost totally disappeared" in Alberta.¹⁶ Parallel declines have been documented in many of the western

United States.¹³ Some other species, including Green Frog and Mink Frog, approach their range limits in Manitoba.^{8,14} Though globally secure, these two species have been assigned the provincial conservation status ranks S2 (Rare; may be vulnerable to extirpation) and S3 (Uncommon/Sensitive), respectively.¹⁷ This article includes some new distributional information on these two frogs.

The natural history and distribution of Manitoba amphibians is described in *The Amphibians and Reptiles of Manitoba*.⁸ This book includes a



Northern Leopard Frog near Davidson Lake, Ontario-Manitoba border, 6 July 2005.
Peter Taylor

synopsis of calling dates, but little information on daily calling cycles. Many amphibian calling survey protocols call for surveys to commence one-half to one hour after sunset and cease before midnight.^{2,4} While it is true that most frog and toad species call strongly in the late evening, this is not necessarily the ideal time to survey all species. For example, Smith has pointed out the difficulty of surveying Northern Leopard Frogs, because the calling period is short and chorusing behaviour is poorly understood.¹² Typically, a minimum of three surveys is recommended on any given route or study area, on dates selected for adequate coverage of all species from early to late breeders.^{4,6} Weather conditions are obviously important; overall, calling tends to be most intense on calm, warm, humid evenings. However, no two species are identical in their response to changing weather conditions.⁷

This article summarizes daily and seasonal calling patterns for eight species of amphibians in the Pinawa area (50°N, 95°W) of southeastern Manitoba. The intention is to help others refine survey methods, and also to provide baseline information to help detect future population and distribution changes that may arise from climate change or habitat alteration. The information may also help naturalists to plan outings to experience frog calls at their peak.

Data were collected between 1989 and 2005, but I was absent for the entire spring in 1999 and 2004, most of April 2000, and all of April and May 2005. While the data include some “official” roadside amphibian survey results, most were collected opportunistically. Some observations were incidental to various bird surveys (for owls and

American Woodcock, as well as the more generalized Breeding Bird Surveys) or the nocturnal and early-morning portions of 24-hour birding marathons (“Big Days”). The majority were made while walking near home or the workplace, driving or birding in the area, or simply listening from the doorstep or bedroom window at home. A preliminary report on this project was presented at an amphibian conservation workshop in Winnipeg in 1994.¹⁵

Inevitably, my zeal for data collection has varied over the 17-year duration of this project, but an effort was made to sample all hours of the day and night within the peak calling periods. Coverage is weakest in the “wee hours” of the morning and in mid-afternoon. There are no data for Cope’s Gray Treefrog (*Hyla chrysoscelis*) or Canadian Toad (*Bufo hemiophrys*), whose range limits lie a little southwest of Pinawa. Data are sparse for the Mink Frog and Green Frog, which are not known to occur in the immediate vicinity of Pinawa.

Data were compiled on charts divided into five-day periods from April 1 to September 8, and one-hour periods throughout the day. For each combination of date and time intervals, a score of 0 to 3 was assigned to each species, based on the highest observed calling intensity, employing the scale commonly used in amphibian surveys:⁶

- 0 - No records
- 1 - Individuals can be counted; there is space between calls
- 2 - Calls of individuals are distinguishable, but some calls overlap
- 3 - Full chorus; calls are constant, continuous, and overlapping [such that individual calls are not distinguishable].

Condensed versions of these charts, based on total scores for 10-day and three-hour periods, are given in Figures 1 to 4. To help make comparisons, the vertical scale on these figures is adjusted (normalized) to a peak value of 1.0 for all species. The figures exclude occasional calling by a few species after early August, as described in the individual species accounts. Extreme calling dates, as well as extreme dates for full choruses, are summarized in Table 1. I would be pleased to provide the full data tabulations, either printed or electronically, to any interested reader.

There is, of course, a lot of variation between seasons, with emergence and calling being earlier if sustained mild weather brings an early thaw. Thus, Boreal Chorus Frogs and Wood Frogs started calling on 8–9 April in the relatively mild spring of 1998 (and on

similar dates in some years before 1989), but not until 27–30 April in 1995–1997, when cool conditions prevailed in early spring. The recommended survey periods are selected to be near the calling peaks, at least in most seasons. The summaries also include some anecdotal observations made outside the breeding season.

Long-term average temperatures for the Pinawa area range from about -18°C in January to +20°C in July, with an average frost-free period of about 108 days from late May to mid-September. Calling dates for the early-emerging frogs are about a week earlier in the Red River Valley (100 km southwest of Pinawa), and probably one or two weeks later in the northern Interlake region (200 km northwest of Pinawa) or areas with comparable climates. The sequence in this list and in Table 1 follows the normal sequence of

Species	Earliest calling	Earliest full chorus	Latest full chorus	Latest calling
Boreal Chorus Frog	April 8, 1998	April 9, 1998	June 7, 1997	July 16, 1992
Wood Frog	April 9, 1998	April 9, 1998	May 20, 1996	May 31, 1997
Spring Peeper	April 12, 1998	April 26, 1998	June 10, 1996	June 20, 1993
Northern Leopard Frog	April 24, 1998	May 13, 2003	May 25, 1996	June 7, 1993
Gray Treefrog	April 30, 1998	May 11, 1998	July 5, 1992	Sept. 6, 1996
American Toad	April 30, 1998	May 15, 1991	June 11, 1996	July 16, 1992
Mink Frog	May 25, 1991	June 11, 1995	July 12, 2002	July 31, 1989
Green Frog	June 13, 1991	—	—	July 31, 1989

Table 1: Extreme Dates for Calling and for Full Choruses of Frogs and Toads near Pinawa, Manitoba.

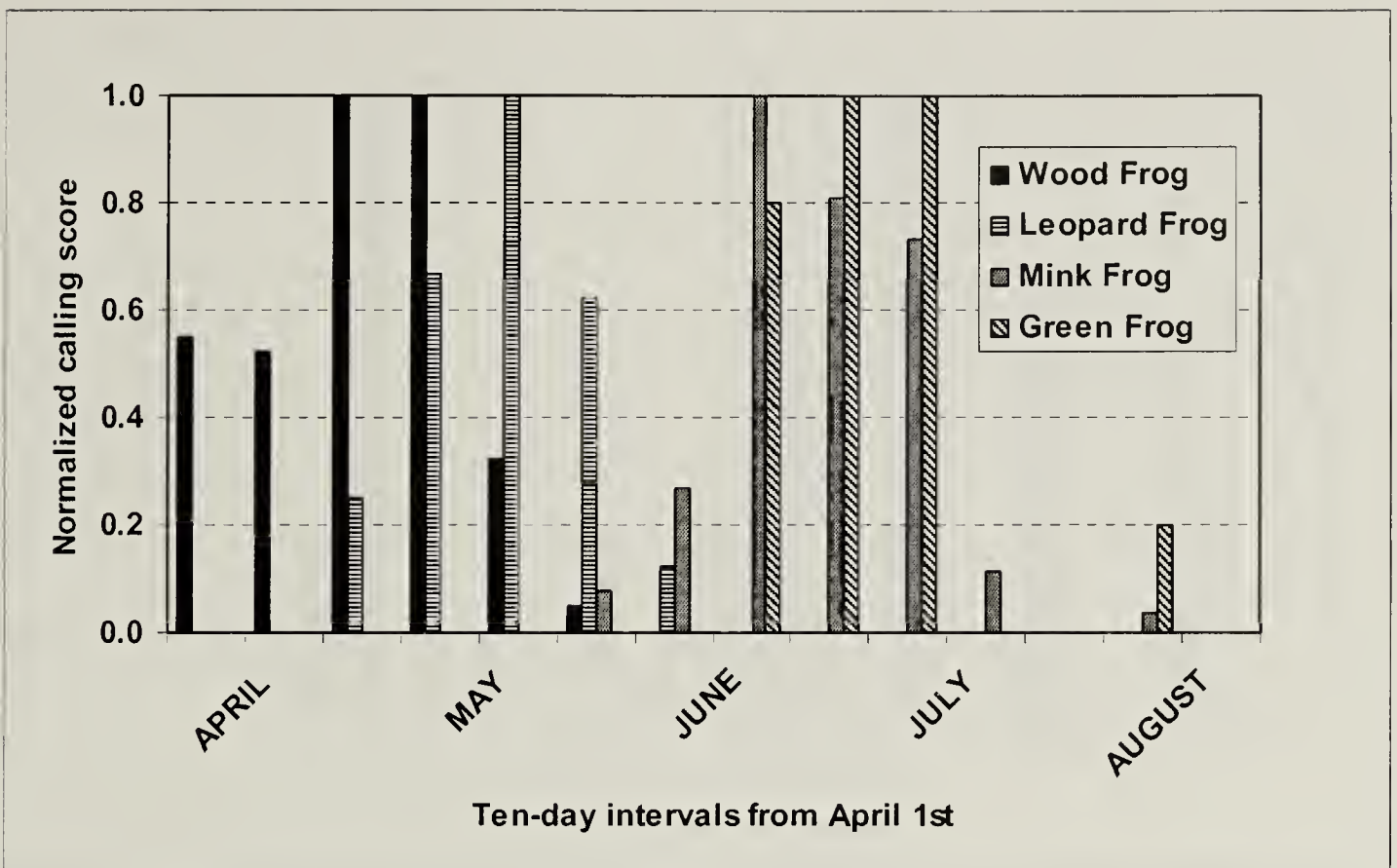


Figure 1. Summary of calling dates for "true" frogs (genus Rana) near Pinawa, Manitoba.

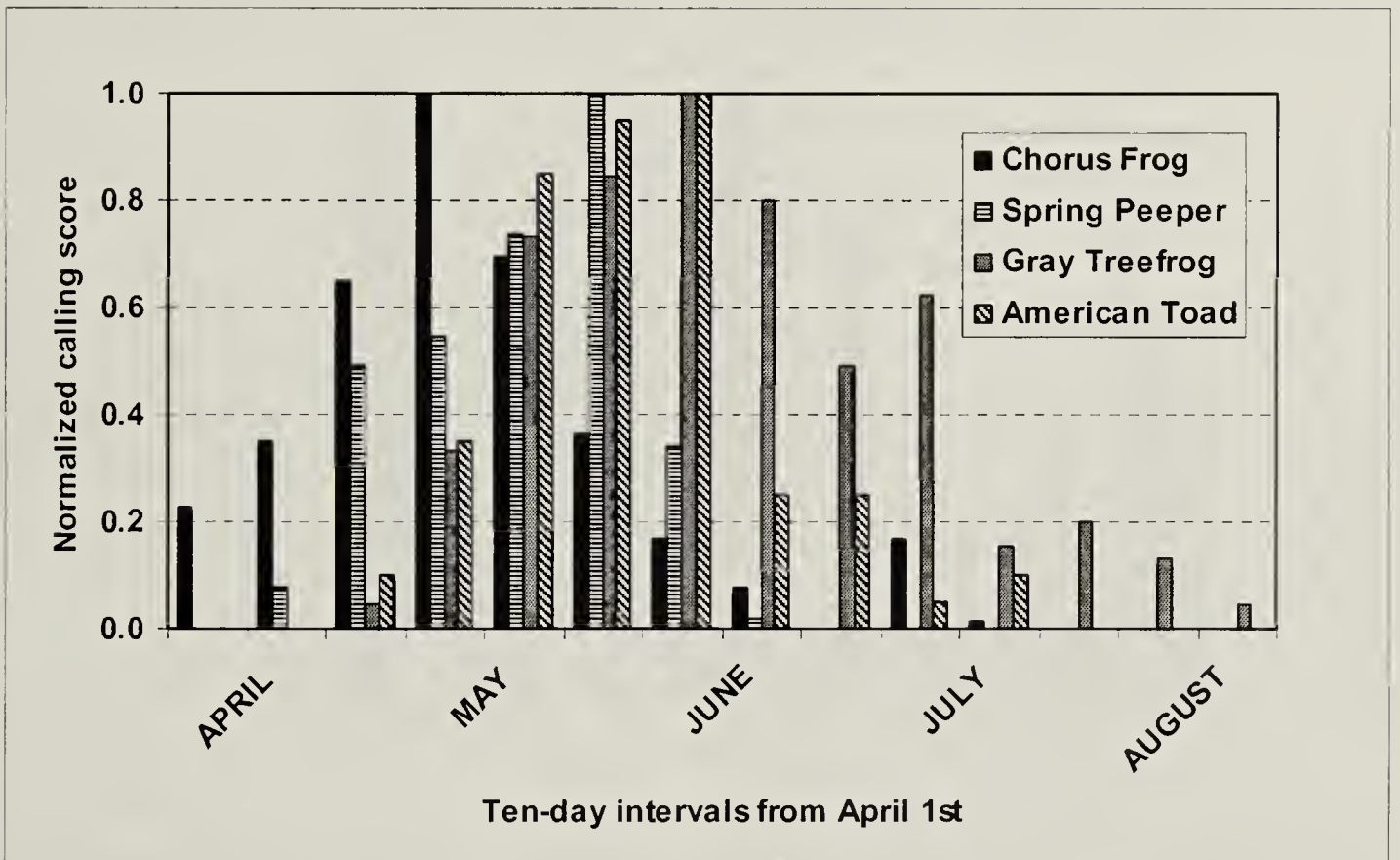


Figure 2. Summary of calling dates for toads, treefrogs and allies near Pinawa, Manitoba.

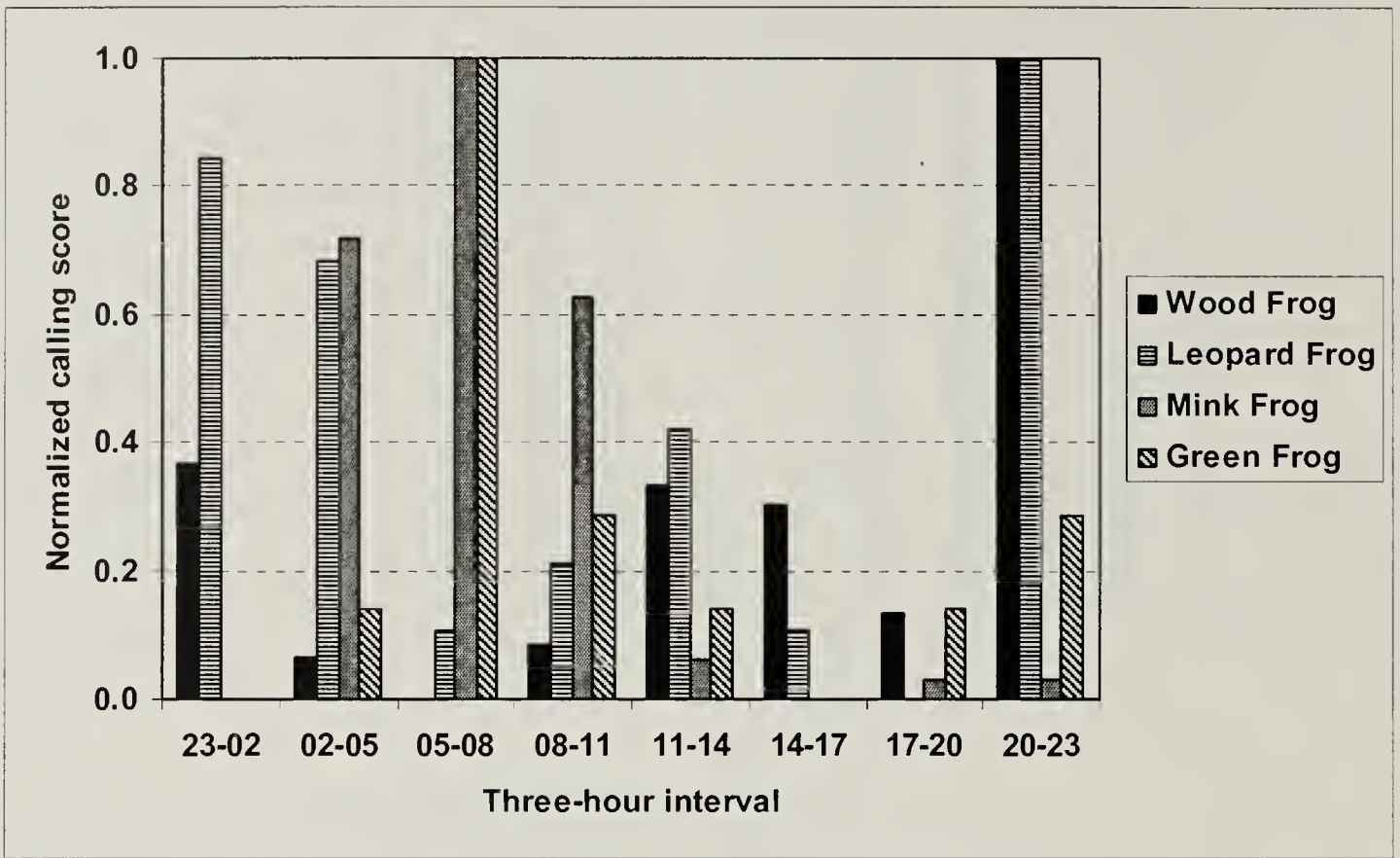


Figure 3. Summary of calling times for "true" frogs (genus *Rana*) near Pinawa, Manitoba.

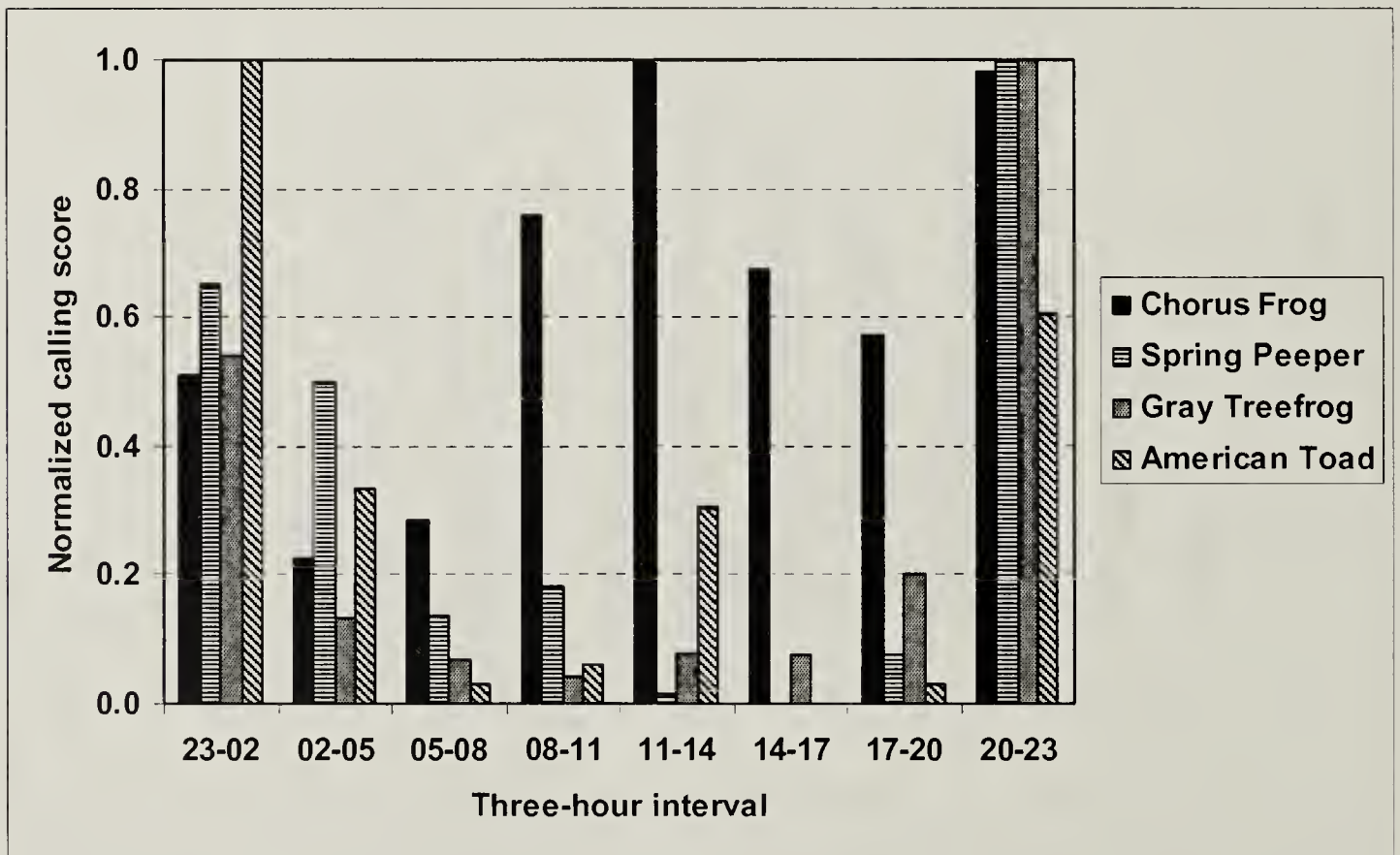


Figure 4. Summary of calling times for toads, treefrogs and allies near Pinawa, Manitoba.

emergence for the eight species, and the nomenclature follows the Canadian checklist of Weller and Green.¹⁶

BOREAL CHORUS FROG (*Pseudacris maculata*)

- Extreme calling dates:
8 April 1998, 16 July 1992.
- Extreme dates of full choruses:
9 April (1998) – 7 June (1997).
- Recommended survey period:
25 April to 15 May.
- Recommended survey time:
Noon to 5 PM; later on warm evenings.

This widespread species emerges and commences calling during the first warm, sunny spell in April, when much of the winter's snow accumulation has gone and daytime temperatures rise to about 15°C. It breeds at temporary roadside and woodland pools in farmland as well as forested areas. The distinctive call is often likened to the teeth of a comb being plucked. Calling is sporadic, rising and falling in intensity with the temperature, and may cease for a week or more during cool weather. Although full choruses usually die down well before the end of May, there is often a resurgence in calling (though never at full intensity) after heavy rains in June or early July. Sporadic, weak calling has been noted as late as September, but this is not thought to be related to breeding.⁸

Presumably because of the early emergence, when overnight frosts are still frequent, the first calls of the season are typically heard in the warmest part of the day, around noon or early to mid-afternoon. Calling often commences around 9–10 AM, once the overnight chill has eased, and peaks between noon and 5 PM. On warmer nights it may continue through to the small hours of the morning; indeed, this species has

been noted calling at all hours of the day and night. Nevertheless, there is often a marked reduction in calling at nightfall, and silence reigns on cool nights. Thus, Boreal Chorus Frogs may be under-represented in some evening calling surveys, while the daylight hours can be very productive for finding breeding localities. Even when calling strongly, this tiny frog is extremely difficult to see; it normally falls silent when a human approaches within about 10 metres of a calling site. Though still easily found in spring, this species seems less abundant now than when I first came to Pinawa 30 years ago.

WOOD FROG (*Rana sylvatica*)

- Extreme calling dates:
9 April 1998, 31 May 1997.
- Extreme dates of full choruses:
9 April (1998) – 20 May (1996); much variation from year to year within these limits.
- Recommended survey period:
25 April to 10 May; earlier in some years.
- Recommended survey time:
8 PM to 11 PM.

Wood Frogs are abundant in marshes and moist woodland, both coniferous and deciduous. The voice suggests a quacking Mallard, leading some people to think that small marshes have an amazingly large population of ducks! Wood Frogs usually emerge during the first warm spell in April, within a day or two of the first Boreal Chorus Frogs. They, too, call habitually from late morning through the afternoon, but calling is usually most intense between about 8 PM and 11 PM; evening surveys are therefore ideal for this species. Calling usually tapers off quickly around midnight, and the species is rarely heard between 5 AM and 10 AM.

The calling period is relatively short; breeding calls diminish rapidly in mid-May and cease by the end of the month. Wood Frogs are commonly encountered along woodland trails or gravel roads throughout the summer and early fall. The occasional soft chuckle, presumably not related to breeding activity, is heard from them during the summer months.

SPRING PEEPER (*Pseudacris crucifer*)

- Extreme calling dates:
12 April 1998, 20 June 1993.
- Extreme dates of full choruses:
26 April (1998) – 10 June (1996).
- Recommended survey period:
10–30 May.
- Recommended survey time:
9 PM to 11 PM.

In southeastern Manitoba, Spring Peepers occur primarily in dense black spruce forest. They are well named for their intense *peep* calls, which can be almost painful at close range. The first individuals typically start calling just a few days after the first Boreal Chorus Frogs and Wood Frogs, but full choruses are rarely heard before the first week of May. Calling usually commences after 8 PM and is most intense between 9 and 11 PM, so that evening surveys are ideal for this species. On warm nights in the second half of May, calling often continues throughout the night, gradually diminishing after about 3 AM, though a few individuals may continue for several hours after dawn. The species is normally silent from 11 AM to 8 PM. Calling falls off rapidly after the end of May, and is rarely heard after 10 June. Individuals can be found in late summer by searching in the moist, mossy substrate of spruce bogs.

NORTHERN LEOPARD FROG (*Rana pipiens*)

- Extreme calling dates:
24 April 1998, 7 June 1993.
- Extreme dates of full choruses, and recommended survey period:
13 May (2003) – 25 May (1996).
- Recommended survey time:
10 PM to midnight; possibly around 4 AM.

Northern Leopard Frogs are typically found in marshy areas around ponds, sewage lagoons, lakes, and quiet backwaters along rivers. The breeding call is a drawn-out snoring sound, terminating in a series of croaks. The species may well emerge from deep-water hibernation sites some time before calling commences in late April or early May.⁸ The calling period is relatively short, and full choruses are heard only occasionally in marshy areas near Pinawa: sometimes between 10 PM and midnight, and sometimes around 4 AM. A definite, brief “dawn chorus” phenomenon might be exploited for surveys, but it is probably limited to just a few days each year.

Between mid-July and early September, Leopard Frogs (perhaps immature individuals?) often make a soft, chuckling sound, more reminiscent of a Wood Frog’s spring “quacking” than the Leopard Frog’s breeding call.

Leopard Frogs wander well away from water during the summer months and individuals are often flushed, for example, by a passing lawnmower. Immense numbers (several per metre of shoreline) were noted at the Pinawa sewage lagoons in late July 1990—enough to attract a small number of bitterns and herons, including a rare

Green Heron, to feed on them. I have not seen such numbers before or since. This observation resembles Martin Bailey's report of a sudden profusion of Leopard Frogs at a water hazard on the Weyburn, Saskatchewan golf course in July 2003, and illustrates how the species' huge reproductive potential may be realized under ideal breeding conditions.¹

It may be mid-October before the last Leopard Frogs drag themselves back to hibernation, sometimes leaving interesting trails on sandy lakeshores; around Pinawa, they are usually the last amphibians to be seen on land before freeze-up.

GRAY TREEFROG (*Hyla versicolor*)

■ Extreme calling dates:

30 April 1998, 6 September 1996.

■ Extreme dates of full choruses:

11 May (1998) – 5 July (1992).

■ Recommended survey period:

25 May – 25 June.

■ Recommended survey time:

8 PM to midnight at temperatures above 15°C.

This is usually the last of the more terrestrial frogs to emerge in spring. It occurs in various woodland habitats, but seems to prefer moist, deciduous forest with access to fairly deep, permanent pools or ditches for breeding. These include flooded sand quarries and "borrow pits" where gravel has been extracted for road construction. The grey and light-green coloration gives excellent camouflage in leafy trees and shrubs, and calling individuals are almost impossible to see, even in shallow pools with sparse vegetation. Gray Treefrogs sometimes visit houses, where they hunt insects around windows on summer nights. As

shown in the photograph on the back cover, their remarkable toe pads give adhesion even on a vertical glass surface.

The call is a short, modulated trill, not unlike the advertising call of a Red-headed Woodpecker. It is rarely heard before the second week of May, and calling may be irregular until consistently warm weather gets established towards the end of May. Full choruses can usually be heard for most of June, sometimes continuing into the first week of July. Calling gradually tapers off through July, though a few individuals may call sporadically until early September. Preston cites an exceptionally late calling date, 3 October 1981, near Libau (about 60 km WNW of Pinawa).⁸

Gray Treefrogs have been noted calling at all hours of the day and night, but primarily between 8 PM and 2 AM; they are therefore well suited for late evening surveys. The first individuals may start calling around 5 PM, and a full chorus often develops before sunset. Duration of the chorus is weather-dependent. If overnight temperatures remain above about 15°C, a full chorus may continue unabated until about 2 AM, gradually tapering off through the pre-dawn hours, with only scattered individuals being heard after 4 AM.

AMERICAN TOAD (*Bufo americanus*)

■ Extreme calling dates:

30 April 1998; 16 July 1992.

■ Extreme dates of full choruses, and recommended survey period:

15 May (1991) – 11 June (1996).

■ Recommended survey time:

10 PM to 12 PM.

Toads are scattered around the Pinawa area, and no obvious habitat preferences for the breeding pools have been noted. The male's call is a prolonged trill at a constant pitch, but usually differing in pitch between neighbouring individuals. Most records involve just one or two individuals, and full choruses are quite rare. This is perhaps the most nocturnal of the eight species, with a marked peak in calling records between 10 PM and 2 AM. Nevertheless, strong calling has occasionally been heard around noon, especially during the early part of the calling period. Toads are not often heard before the second week of May or after the first week of June. Large numbers of newly transformed toadlets may sometimes be encountered on gravel roads in moist, forested areas.

MINK FROG (*Rana septentrionalis*)

- Extreme calling dates:
25 May 1991, 31 July 1989.
- Extreme dates of full choruses:
11 June (1995) – 12 July (2002).
- Recommended survey period:
11-30 June.
- Recommended survey time:
4 AM to 7 AM.

This aquatic frog reaches the northwestern limit of its known range in and around Whiteshell and Nopiming Provincial Parks (PPs), which adjoin the Ontario border in southeastern Manitoba.^{8,14} There it occurs in slow-flowing creeks, small lakes and bays of larger lakes, often where Yellow Pond-lilies (*Nuphar variegatum*) are present. I have encountered Mink Frogs primarily while running Breeding Bird Surveys on the Bird River and Springer Lake routes in and near Nopiming PP, or immediately afterwards.^{14,15} The time frame of these surveys explains a

preponderance of records, including some full choruses, between 4 AM and 7 AM, with few individuals heard outside the period from 3 AM to 11 AM. The resonant "chuck-chuck" call can sometimes be mistaken for the staccato tapping of a Yellow-bellied Sapsucker. There are insufficient data on calling at other hours to judge whether late-evening surveys are appropriate, but there is a definite "dawn chorus" effect that can easily be exploited by "piggybacking" Mink Frog surveys onto Breeding Bird Surveys in suitable habitat.¹⁵

The presence of Mink Frogs in the Springer Lake area (50° 32' N, 95° 28' W) has been described elsewhere.¹⁴ They have since been found at several other locations in the southern portion of Nopiming PP. Winnipeg resident Doug Barry, who formerly owned a cottage in the park, tells me he has frequently heard Mink Frogs in and near Beresford Lake (50° 52' N, 95° 14' W) and nearby at Stormy Lake and in the creek linking Beresford and Garner Lakes. On 28 June 2000, I heard one or two Mink Frogs near Bissett at Horseshoe Lake (51° 03' N, 95° 44' W; one of five Manitoba lakes with this name), thus extending the Manitoba range north of the 51st parallel. Schueler and Ross suggested that the range may extend as far northwest as the Nelson River, which flows from the north end of Lake Winnipeg to Hudson Bay.¹¹ This speculation was based mainly on the frog's known occurrence at Moosonee, near the southern shore of James Bay in Ontario, and much farther north in Labrador.¹⁰ It is unlikely that Horseshoe Lake is the Mink Frog's northernmost outpost in Manitoba, but surveys would be difficult to conduct farther north because there is no road access.



Figure 5. This beaver pond near Davidson Lake, ON, just east of the Manitoba border, is inhabited by both Mink Frogs and Green Frogs. Peter Taylor

GREEN FROG (*Rana clamitans*)

- Extreme calling dates:
13 June 1991, 31 July 1989.
- Peak calling and recommended survey periods: probably mid-June to early July, but more data are needed.
- Recommended survey time:
4 AM to 7 AM.

This frog also reaches its northwestern range limit near the Ontario–Manitoba border. Aquatic like the Mink Frog, it occurs in similar creek and lakeshore habitats, and the two species are often found together. However, the Green Frog's range is more restricted and its numbers are much lower than those of the Mink Frog. Its resonant *clung* call is often compared to a loose banjo string.

Preston shows only three records from Whiteshell PP, the most recent in 1952; the rediscovery of this species at Springer Lake in Nopiming PP in 1989 has been described previously.^{8,14} A brief update is given below. The comments about calling times for Mink Frogs, including the dawn chorus phenomenon and the possibility of piggybacking on Breeding Bird Surveys, also apply to this species. However, in a recent study of Green Frogs in New Brunswick, Mazerolle did not detect any relationship between time of day and probability of calling, at least between 3:30 PM and midnight, though other observers have remarked more intense calling in the evening and at night.^{5,7}

Following the rediscovery of the

Green Frog in Manitoba at Springer Lake in 1989, several additional records have been obtained, as follows.

Beresford Lake area (50° 52' N, 95° 14' W) — Doug Barry (pers. comm.) has heard “the twangy tune of the Green Frog” in and around Beresford Lake, including the stream that connects Beresford and Garner Lakes, during the 1990s.

Davidson Lake area (50° 27.7' N, 95° 8.5' W) — This small lake straddles the Manitoba–Ontario border, and the coordinates correspond to a large beaver pond (Figure 5) alongside the Werner Lake road, Ontario, just north of the lake and about 1 km east of the border. This road is an eastward extension of Manitoba Provincial Road (PR) 315. Four Green Frogs were heard at or near this pond on 30 June 2001 (P. Taylor, R. Zach), and six were heard along a 6-km stretch of the road running east from the pond on 6 July 2005 (P. Taylor, R. Zach, R.F. Koes). On the latter date, a large, green frog with a yellowish throat (either a Green Frog or a Mink Frog) was seen struggling and finally succumbing in the jaws of a pike near the shore of a small lake alongside the road. On 7 July 2001, one Green Frog was heard calling in a small pond alongside PR 315 about 1 km west of the provincial border (P. Taylor, R.F. Koes, G.D. Grief).

Rabbit River (50° 39.2' N, 95° 24.7' W) — These coordinates correspond to the point where PR 314 crosses the Rabbit River; one Green Frog was heard here on 8 July 2002.

Springer Lake (50° 32' N, 95° 28' W) — Green Frogs have been heard in or near the small, western arm of Springer Lake as follows: one on several occasions between 23 June and 31

July 1989, as described previously;¹⁴ at least one on 13 June and two on 14 June 1991; one on 20 June 1993; three or four on 21 June 2001; at least four on 8 July 2002.

Thus, while the numbers detected are low and the species is not found every year, a small population of Green Frogs does appear to persist in and near Nopiming PP.

Acknowledgments

I thank Carol Scott for many helpful comments on a draft of this article, and Doug Barry for information on frogs near Beresford Lake.

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11. SCHUELER, F.W. and F.D. ROSS. 1986. Range extensions for hylid frogs in Manitoba. *Blue Jay* 44:168-173.

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14. TAYLOR, P. 1990. Notes on the Green Frog and the Mink Frog in Manitoba. *Blue Jay* 48:5-6.

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16. WELLER, W.F. and D.M. GREEN. 1997. Checklist and current status of Canadian amphibians. In ref. 2, Appendix I.

17. Conservation status ranks can be found at the following websites: <http://www.especessauvages.ca/> and <http://www.natureserve.org/explorer/>. Information on the Manitoba Conservation Data Centre, which assesses provincial conservation status ranks, is available at <http://web2.gov.mb.ca/conservation/cdc/>.

The following websites contain a wealth of information on amphibian identification, conservation, and survey techniques; all were accessed on 2 March 2006.

Canadian Amphibian and Reptile Conservation Network: <http://www.carcnet.ca/>

Frogwatch identification page for Western Canadian frogs and toads, including calls <http://www.cnf.ca/naturewatch/frogwatch/west.html>

U.S. Geological Survey, Patuxent Wildlife Research Center, Laurel, MD <http://www.pwrc.usgs.gov/monmanual/techniques/>

Tony Gamble webpage, with photos of Minnesota species and many links <http://www.tc.umn.edu/~gamb1007/hylidae.htm>



Boreal Chorus Frog

Wayne Lynch

NOTES AND LETTERS

BIRD NESTS IN GRAIN BINDERS

On page 213 of *Blue Jay* 63(4), under CORRIGENDA, referring to the story of the Loggerhead Shrike nesting on the threshing machine, Mr. Hrushka wrote "The only bird to build a nest in a grain binder is a House Wren, which builds its nest in the twine box." I want to point out that Mountain Bluebirds also found the round hole of the twine box irresistible for a nest site, even in the semi-wooded parkland, north of North Battleford, SK. A pair nested in the twine box of our grain binder annually when I was growing up in the late 1930s-early 1940s.

- Gustave J. Yaki, 420 Brunswick Ave. SW, Calgary, AB T2S 1N8

OWL FOOD CACHES

I really enjoyed reading the note on the Burrowing Owl and the number of food items cached. I've seen Pygmy Owls capture voles and fly into the forest with them, returning promptly to capture another. Most interesting behaviour. As well, I've seen Great Horned Owl nests lined with voles, but only a dozen or so. Amazing to me that 210 voles would be stockpiled!

- Linda Van Damme, 619 29th Ave. S, Creston, BC V0B 1G5

MITES ON SNOWY OWLS

I have noted on some Snowy Owls I have captured that there is a small mite-like insect which crawls to the surface of the feathers, then crawls back down again after a brief appearance. I have been told that these are not blood-sucking mites but live off the feathers and are of benefit

to the birds. If you have information about this could you print it in the *Blue Jay*?

- Sig Jordheim, Box 544, Kyle, SK S0L 1T0

[Editors' note: the following reply was provided by Terry Galloway, Professor of Entomology at the University of Manitoba.]

Dear Mr. Jordheim,

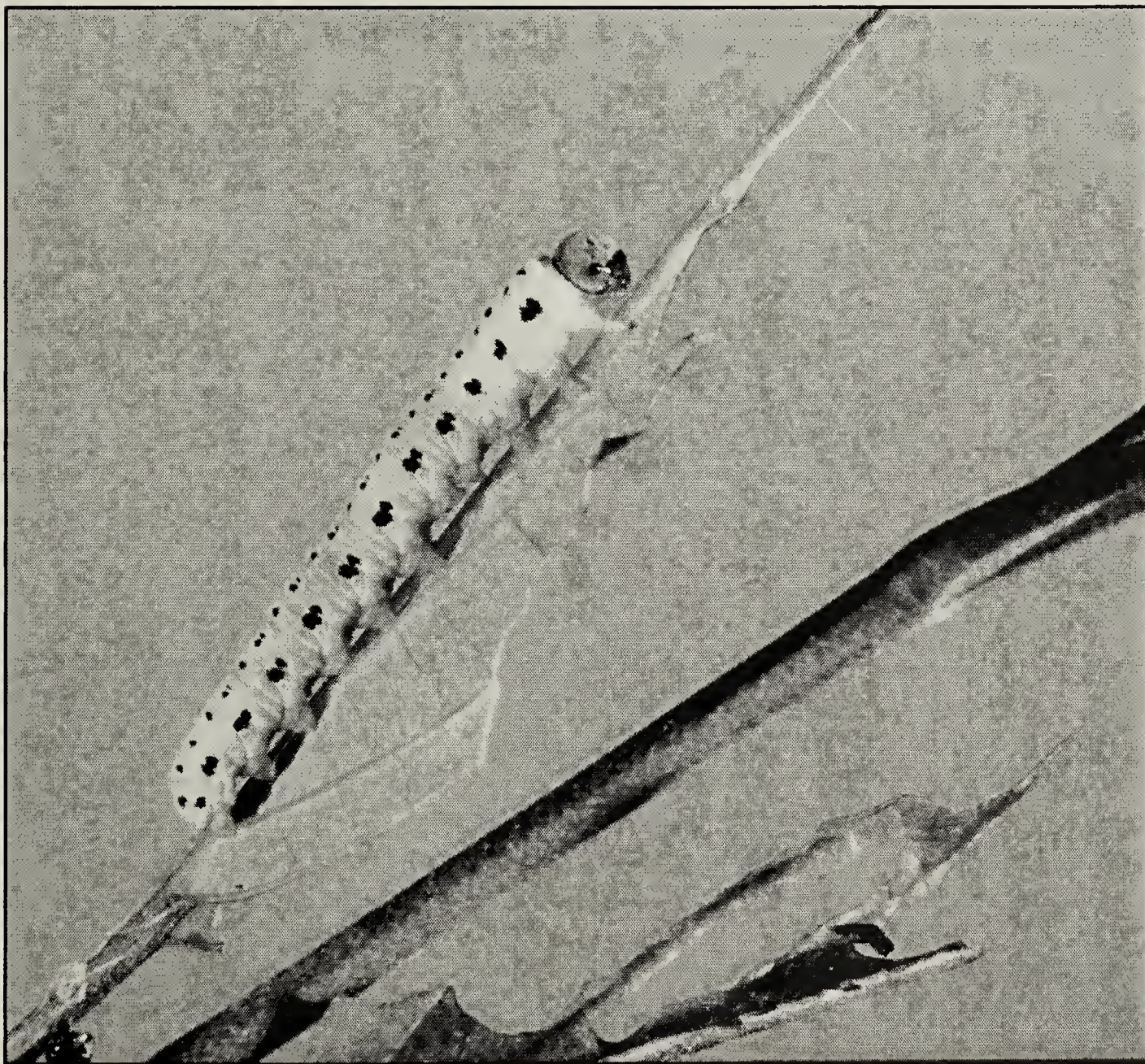
The small insect that you have observed on Snowy Owls is almost certainly a chewing louse. Owls are hosts to a number of different lice, mostly in the genera *Strigiphilus*, *Kurodaia* and *Colpocephalum*, and some species of owl, the Great Horned Owl, for example, may harbour more than one of these. However, Snowy Owls are known as a host for just one species, *Strigiphilus ceblebrachys*, and this is probably the one you have seen running among the feathers on your owls. In more than 50 Snowy Owls from Manitoba that I have examined for ectoparasites, this is the only species of louse that I find regularly, and more than 90% of these birds have been infested. One specimen from God's Lake Narrows was infested with more than 5,000 *S. ceblebrachys*! *Strigiphilus* spp. are primarily feather feeders, and in processing these lice onto microscope slides for proper identification, I often find their crop completely packed full with uniformly cut pieces of feather barbs. Feathers are extremely difficult to digest, so these lice may have symbiotic bacteria in their guts to assist in the breakdown process. I can't say that these lice

would be of benefit to the bird as a result of their feeding on the feathers. In fact, when a bird is heavily infested, especially in the case of Snowy Owls, I would suspect that damage to the feather would more likely affect the insulative properties of feathers and could make thermoregulation more difficult. I should also mention that I have occasionally seen a variety of other species of lice on Snowy Owls, species typical of their prey, both mammal and bird. These lice probably ended up on the owl quite accidentally and I have seen no evidence that they become permanently established on their accidental hosts.

DOGWOOD SAWFLIES

I found the mystery photo of the sawfly larvae most interesting. You had to go to Maine to get your pictures but I only had to step out onto our front lawn to photograph what appears to be a similar species. I found about 20 larvae actively feeding on a Red Osier Dogwood and thinking they were moth caterpillars set out to photograph them. It wasn't until I was taking the pictures that I noticed the number of prolegs and concluded it was not a moth.

- Robert E. Gehlert, Box 11, Site 5, RR 2, Tofield, AB T0B 4J0



Sawfly larva extended, showing at least 6 pairs of prolegs. Moth and butterfly larvae have five or fewer. (Also see p. 62.)

R. E. Gehlert

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CATERPILLARS IN THE FIELD AND GARDEN

Thomas J. Allen, Jim P. Brock, and Jeffrey Glassberg. 2005. Oxford University Press. 240 pp. Paperback. 13cm x 20 cm (5 1/2" x 8 1/4"), 413 color maps, 496 color photos. U.S. \$29.95. ISBN: 0-19-514987-4

CATERPILLARS OF EASTERN NORTH AMERICA

David L. Wagner, 2005. Princeton University Press. 496 pp. Paperback. 12.5 cm x 20 cm (5" x 8"), 1,200+ color photos, 24 line illustrations. U.S. \$29.95. ISBN: 0-691-12144-3

Many people have asked me why I didn't include the caterpillars when I wrote the field guide, *Butterflies of Alberta*.¹ My standard answer has been that each of our over 160 Alberta butterflies goes through five instars as a caterpillar (between shedding of their skins), and that each instar looks a bit different. Not only that, but butterflies are hopelessly outnumbered by the moths—more than 3000 for Alberta alone—and there is no single easy way to tell a butterfly caterpillar from a moth caterpillar. The project is simply too big, so we butterfly people generally avoid it.

Now, suddenly, we have two new caterpillar books to celebrate. The first, *Caterpillars in the Field and Garden. A Field Guide to the Butterfly Caterpillars of North America* by Thomas Allen, Jim Brock, and Jeff Glassberg, deals exclusively with the caterpillars of butterflies in the US and Canada. It is nicely illustrated with photographs of the caterpillars as well as selected adult butterflies, and begins with a well-written introductory section covering such topics as butterfly gardening, rearing caterpillars, and conservation. This is a book for the confirmed butterfly enthusiast, intended as a companion

to butterfly field guides, and as such it does a fine job. I have used it in the field, and although not all of the butterfly caterpillars of the Canadian prairies are illustrated (for instance, you won't find the Canadian Tiger Swallowtail, but you will find the incredibly rare Arizona vagrant, the White-dotted Cattleheart), it is certainly a better reference than any that have come before it.

David Wagner's book, *Caterpillars of Eastern North America: A Guide to Identification and Natural History*, has twice as many pages as its competitor, but is priced the same. Wagner covers both butterfly and moth caterpillars, and his photos are superb as well. He may not have as many butterfly species in his book, but his overall coverage of caterpillar diversity is impressive. Not only that, he is also such a knowledgeable lepidopterist that the accounts for each caterpillar are accompanied by more fascinating details and interesting facts than you might think possible. Wagner's approach is more technical, but the reader will be richly rewarded by the details and breadth of the book as a whole. Don't let the word "Eastern" in the title scare you away—outside of the

mountains the book will work reasonably well.

If I had to recommend only one of these two books, I would put Wagner's first. But of course, that's silly—why not buy both? I know that I'll be using both of them regularly and my nine-year old son will be borrowing them frequently as well. We love rearing caterpillars in the summertime and these books are just what we need to help our hobby along. In fact, we've already made good use of

them on a trip to South Texas in the fall. I happily recommend them, and I'm certainly appreciative of the hard work and creative energy that the authors have put into these two fine books.

1. ACORN, JOHN. 1993. *Butterflies of Alberta*, Lone Pine Press, Edmonton, AB

Reviewed by John Acorn, Department of Renewable Resources, University of Alberta, Edmonton, AB T6G 2H1. E-mail: <janature@compusmart.ab.ca>

THE ENCYCLOPEDIA OF SASKATCHEWAN: A LIVING LEGACY

CANADIAN PLAINS RESEARCH CENTRE. 2005. University of Regina, SK. ISBN 0-88977-175-8. Hard cover. \$125 Can. 1092 pages.

The Encyclopedia of Saskatchewan was a mammoth 9-year Centennial project involving over 800 writers, dozens of editors, support staff, student assistants and committee members. This is the first provincial encyclopedia for Saskatchewan and the third provincial encyclopedia in Canada. The 1,000 page, single, 9-pound, hard-cover volume (one needs a sturdy table for it) includes over 2,200 alphabetically organized individual entries covering all aspects of life in Saskatchewan, and 21 in-depth essays on topics ranging from agriculture to military history.

Both the entries and essays are concise and well written for the layperson and students (Grade 7 and up), and are without serious errors. Many entries have 1 to 3 references to assist readers to find additional information. Most of the 21 essays have additional references. These entries and essays will encourage readers to

seek out additional information from other sources.

Each alphabetical 'chapter' begins with a stunning image by photographer Courtney Milne. In addition, the book contains 406 colour and 593 black and white photos illustrating the people, objects, features, events and places in the province. There is a good mix of archival and recent photos. In addition, 34 maps, 56 tables and 59 line drawings and illustrations were used to highlight items and facts in selected entries and essays throughout the book. These features enhance the book's appearance as well as the text. Natural history topics include major geographic features and regions, climate change, biodiversity, conservation, flora and fauna. The flora and fauna entries are at the family level or higher, for example plants and birds (at the family level), mammals (by major group), amphibians, reptiles, fishes,

trees and invertebrates (by major group). These topics are covered by brief entries ranging in size from a single paragraph to about two pages, and many have accompanying illustrations. For example, the entry on owls contains basic information on owl attributes and habits, plus brief descriptions of Saskatchewan species, their habitats and a photo of a Great Horned Owl. Some naturalists with biographies in the Encyclopedia are Doug Gilroy, Bill Sarjeant, Stuart Houston, Isabel Priestly, Fred Bard, Fred Lahrman, R.T. Coupland, Paul Riegert and George Ledingham.

Although they are very different books, there is significant yet complimentary overlap between the second edition of the Atlas of Saskatchewan and the Encyclopedia in the areas of natural history, human geography, economics and history topics.¹ The Atlas has more text information and visual presentation of information for a smaller number of entries, but the Encyclopedia has different, and a greater number of, entries (especially for institutions, events and people), and often more up-to-date information (Encyclopedia entries were accepted up to the fall of 2004) than the Atlas, published in 1999. With these two important reference books, Saskatchewan is well covered in terms of geography, natural history,

economy, history, government, culture and people.

Three lists are appended to the book: the 800 plus contributors, entries organized by 22 subject areas, and the people mentioned in the book, cross-referenced to the relevant entries in the book. The last two appendices greatly assist readers to find information in the book quickly and easily. On the last page, there is a Saskatchewan-at-a-glance feature summarizing key facts about Saskatchewan: name origin, area, geography, time zone, population, climate, governance, flag and provincial emblems.

It must have been tough to decide which entries to include and some readers will find some things excluded from the Encyclopedia. However, I found that this book does an excellent job covering the key features, places, people and events in a single volume publication. I highly recommend this reference book to all libraries and anyone interested in Saskatchewan. It is truly a stunning Centennial project.

1. FUNG, K. (ed.). 1999. The Atlas of Saskatchewan, Second Edition. University of Saskatchewan, Saskatoon, SK.

Reviewed by Robert Warnock, 3603 White Bay, Regina, S4S 7C9. E-mail: <warnockr@accesscomm.ca.>



“Perhaps the most complex mutualism between plants and ants is the ant garden, which is an aggregation of epiphytes assembled by ants. The ants bring the seeds of the epiphytes into their carton nests. As the plants grow, nourished by the carton and detritus brought by the ants, their roots become part of the framework of the nests. The ants also feed on the fruit pulp, the elaiosomes (food bodies) of the seeds, and the secretions of the extrafloral nectaries.”

Bert Holldobler and Edward O. Wilson, *The Ants*, p. 546.

CORRIGENDUM

RESULTS OF THE 2005 INTERNATIONAL BUTTERFLY COUNTS IN SASKATCHEWAN by Mike Gollop and Anna Leighton.

Page 194, last paragraph, third line: the 6 Christina Sulphurs referred to were found at Preeceville, not Nisbet Forest as written.



MYSTERY PHOTO

MARCH 2006 MYSTERY PHOTO

This papery sack, 6 cm long, with a hole in the bottom and hanging from a wolf willow stem, served what purpose and for whom? It was found in mid-May 2005 near Ormiston, SK and photographed by Ross Dickson.



ANSWER TO THE DECEMBER 2005 MYSTERY PHOTO

The green and red Mallard ducklings on the back cover of the December issue were dyed to study movements of ducklings after hatching. (The duckling in the centre is undyed.) The technique, developed by Chuck Evans at the University of Minnesota, involves injecting dye into duck eggs just a few days before the ducklings hatch. When they hatch, the ducklings are coloured and researchers can track where and how far they go from individual nests.² Previous to developing this technique, people tried to follow duckling movements by 'gluing colored feathers to their heads' and by squirting dye on the hen just before the eggs hatched to identify the clutch by association with the hen.¹ The dyes, relatively innocuous when injected at the later stages of maturation of the egg, were Fast Green and Ponceau SX (red), and would stay on the ducklings for several weeks.¹ Web-tagging of the foot while the duckling is still in the egg is a technique used today. It allows researchers to track individuals for a

longer period, even a year later when they return as adults to nest, depending on the amount of wear on the tag.

The photo was taken by Alex Dzubin on the Pinkham Study area, a 10.5 mile square area located 23 km WSW of Kindersley, SK. Alex was collaborating with Bernie Gollop who had banded 501 young Mallards and other species on two 20-acre sloughs in the area in 1954.

1. EVANS, CHARLES. 1951. A Method of Color Marking Young Waterfowl. *Journal of Wildlife Management* 15(1):101-103.

2. EVANS, C. D., A. S. HAWKINS and W. H. MARSHALL. 1952. Movement of waterfowl broods in Manitoba. U.S. Fish and Wildlife Service Special Scientific Report, Wildlife No.16. Washington, D.C.

The mystery photo answer was prepared with the assistance of Alex Dzubin who also took the photograph of the ducklings.

This mystery photo elicited various comments from readers, from Ernie Kuyt's "The injection of dyes into mallard eggs, resulting in brightly coloured ducklings, of course has nothing to do with the study of brood dispersal and mortality. Rather it is another "Poll" to determine who will win the January election. Alex knows which of the three "painted" ducklings lived longest: if it was the red one, the Liberals win; if the blue one made it, the Conservatives are victorious, and the normal-coloured Democrats are in the middle !!" to Ruth Griffith's "a centennial project ... they appear to be in the same colours as our provincial flag."

Thanks to all who wrote in and to Alex Dzubin for his assistance



Sawfly larvae curled up on dogwood leaf

R. E. Gehlert

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